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THE
Bulletin of the Hill Museum

Vol. I. 1921-1924.

THE
Bulletin of the Hill Museum

A MAGAZINE OF
LEPIDOPTEROLOGY

EDITED BY

J. J. JOICEY, F.L.S., F.Z.S., F.E.S., &c., and G. TALBOT, F.E.S.

WITH THE ASSISTANCE OF

L. B. PROUT, F.E.S., Miss A. E. PROUT, F.E.S.
and W. HAWKER-SMITH, F.E.S.

VOL. I. 1921-1924

(WITH 57 PLATES)

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EDITORS' NOTE.

WITH the publication of No. 2 of this Journal, it is decided to introduce a change in the type used for names. We have printed all new names, and other names which are subjects of description, in heavy type, so that they are distinguished from names which are obviously of secondary importance.

A similar method is adopted by Major J. C. Moulton in his "Notes on Malaysian Butterflies (*Journ. Fed. Mal. States Mus.*, x, 1921), and in other writings. Major Moulton, however, prints new names in italics and the others in heavy type. This clashes with other names in italics in the body of the text.

We have made some use of that very useful book, "Colour Standards and Nomenclature," by Robert Ridgway, 1912, and where Roman numerals are placed in brackets after a colour name, these refer to the plate in Ridgway where this colour is depicted.

The present number of the "Bulletin" does not contain any illustrations, but these will be given in No. 3 of this volume, when it is expected to represent all the principal forms, some in colour.

We take this opportunity of correcting a statement which appeared in No. 1, to the effect that the collection of Mr. Herbert Druce was purchased in 1912. This collection was not purchased until 1913, after Mr. Druce's death.

A complete index to Vol. I, will be published separately.

Several papers dealing with descriptions, and on faunistic results are held over for No. 3.

EDITORIAL.

THE first volume of this journal is now complete with the exception of the Index, which will follow at an early date. The first part was issued in 1921, and up to the present no adequate response has been received by way of subscriptions, though a large number of periodicals are exchanged. The cost of producing this journal is very heavy, and we appeal for more subscribers.

The recognized mediums for the publication of entomological papers have all as much copy as they can very well deal with, so that our own journal relieves the congestion to some extent. We have even more copy than we can afford to publish at one time, and must spread it out over a longer period.

The present number contains a paper by Monsieur F. Le Cerf on the "African Papilios in the Hill Museum." His views on the classification of this group are given here for the first time. We hope that the author will contribute to Vol. II a paper on the "Aegeriidae in the Hill Museum," on which group he is so well qualified to write.

The studies on "Noctuidae and Geometridae," by Miss A. E. Prout and Louis B. Prout, will prove of great value to all workers in these groups. Miss Prout is making a special study of the Noctuidae, and a series of further papers will follow in due course.

Professor A. J. T. Janse, who is specializing on the Pyralidae of the world, has given his reports on the species of this group collected in Africa and Ceram by Mr. Joicey's collectors. Further reports are to follow.

The Catalogue of Hainan Lepidoptera is to be continued in Vol. II, and it will be made as complete as possible.

The rich collections of moths made by the brothers Pratt in Sumatra, etc., and by Mr. T. A. Barns in Africa, contain many more novelties than we can find space for at present. Further reports on these will be given in Vol. II. At the present time Mr. Barns is making very interesting collections in the Kivu and Congo regions.

The map of Hainan is reproduced by kind permission of the Inspector-General of Chinese Customs.

Our grateful acknowledgments are due to Messrs. W. H. T. Tams and N. D. Riley for their valued help in comparing specimens at the Natural History Museum. We are also indebted to Dr. K. Jordan for his opinion regarding certain insects.

We are pleased to note here two advertisements in the present issue:—

"Thèses Entomologiques," by P. I. Lathy. This work, dealing with many forms of the very attractive Agrias group, is remarkable for the magnificent hand-coloured plates which equal anything hitherto produced in entomological literature. The general get-up of the work is very sumptuous, and should appeal to the bibliophile as well as to entomologists.

Entomological Cabinets.—The old-established firm of J. H. Hill and Son are giving special attention to the requirements of entomologists, and we can confidently recommend these cabinets. The question of cabinets is always a serious one to the student of small means as well as to institutions. When the material to be housed is extensive, cabinets are liable to become an expensive item. For ourselves we have adopted a very inexpensive cabinet without doors and with drawers running on steel runners.

We are very sorry to hear of the death of the veteran collector, Mr. A. E. Pratt, which occurred at his home at Teddington on January 4th last. Mr. Pratt had travelled extensively for the late J. H. Leech in China and Tibet, making the large collection of Lepidoptera which are dealt with in Leech's works. He travelled for Mr. J. J. Joicey from 1912 to 1914 in South America and New Guinea, aided by his sons Felix and Charles, who afterwards carried on collecting for Mr. Joicey with such wonderful results. Mr. Pratt did not go out again after his return from New Guinea in 1914.



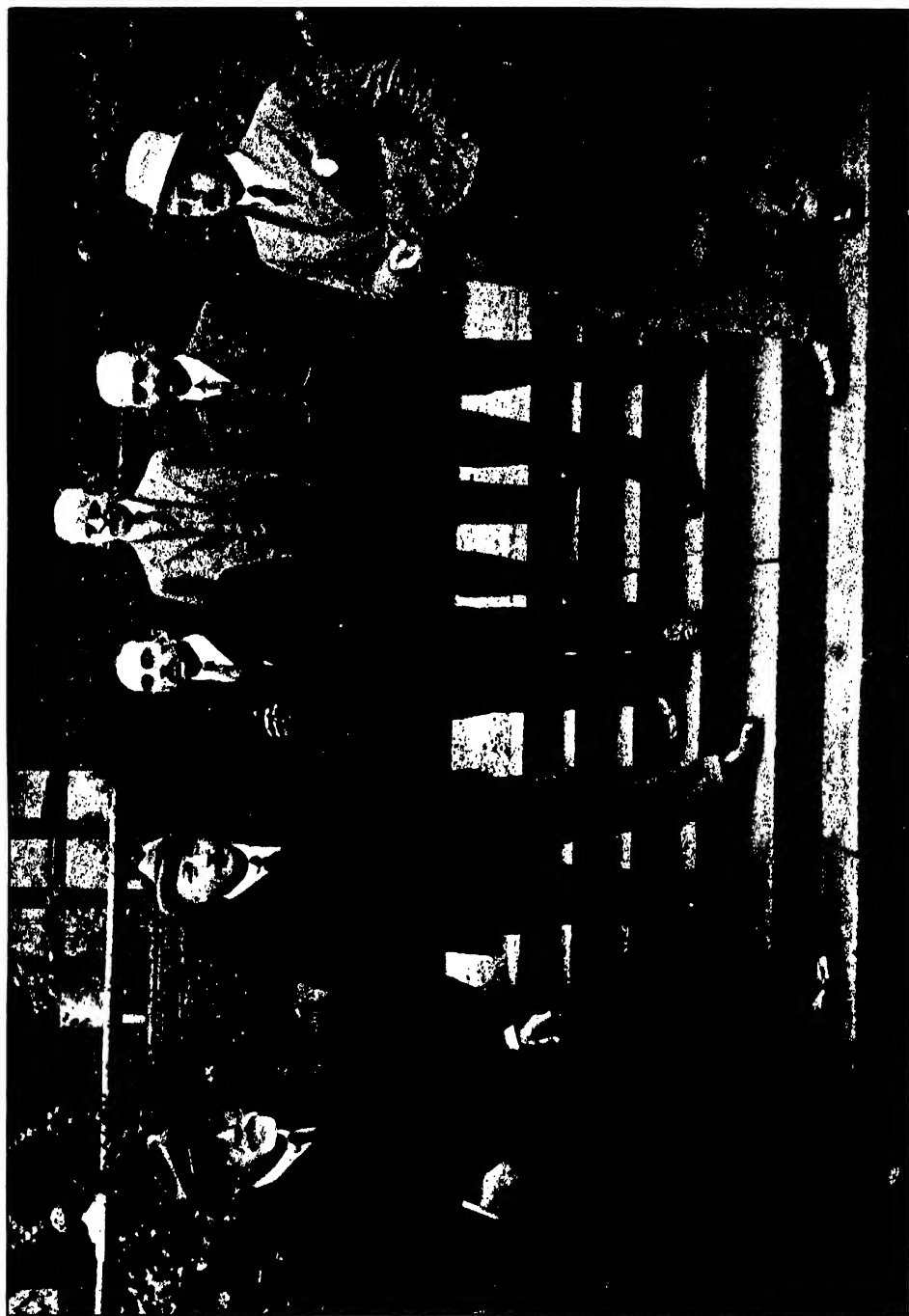
MR. J. J. JOICEY.

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GROUP TAKEN AT THE HILL, JULY, 1920.

A. E. Pratt.	J. J. Joicey.	F. le Cerf.	G. Talbot.	P. I. Lathy.	T. A. Barns.
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I.—INTRODUCTION.

1.—PREFATORY NOTE.

THIS magazine has been established by Mr. J. J. Joicey for the purpose of giving to the entomological world the results of studies carried out at the Hill Museum, Witley. As the title of the magazine indicates, these studies deal solely with Lepidoptera. The collections at the Hill Museum have increased so largely, and the work on them is assuming such proportions, that it is felt we should have our own publication to deal with the results.

It is proposed that this journal be issued half-yearly, but more frequent publication may be possible should there be a sufficient number of subscribers.

In presenting the first number to our fellow lepidopterists, some account will be needed of the Hill Museum and its activities, and also of the principles adopted by us in Lepidopterology and of the methods employed. .

2.—THE GROWTH OF THE HILL MUSEUM.

The Museum was built by Mr. J. J. Joicey to house his increasing collections of exotic and British Lepidoptera. Mr. Joicey's interest in collecting these insects dates from 1906, and since this time he has been indefatigable in adding new forms to the collection. The celebrated collection of the late Henley Grose-Smith was purchased in 1910, and this was followed in 1912 by the purchase of the very extensive and widely-celebrated collection formed by the late Herbert Druce. These collections made it necessary to have a special building, and this was opened in 1913. About this time the Suffert collection was purchased, and also most of the types of species described by Wichgraf. There was also added a mass of material sent home from North Peru by Mr. A. E. Pratt, who, with his son Felix, made a collecting expedition on behalf of Mr. Joicey during 1912. They traversed a little-known part of North Peru, crossed the Andes, and descended the Amazon. These two intrepid collectors went out to Dutch New Guinea for Mr. Joicey in 1913, being joined by Mr. Pratt's younger son Charles,

They sent home very large collections from the Arfak Mountains, the Schouten Islands and Waigeu.

In 1916, Mr. Joicey acquired the collections of *Lycaenidae* and *Hesperiidae* formed by Colonel Charles Swinhoe, and in 1917 there was added the famous collection of South African Rhopalocera made by Roland Trimen, which formed the basis of his work on the South African Butterflies.

In 1919, Mr. Joicey acquired the collection of *Heliconius* formed by the late Herr Riffarth and most of the Lepidoptera collected by Lieut.-Colonel Nurse in Aden, Baluchistan, and Somaliland. There was also added the very fine collection of *Lycaenidae* and *Hesperiidae* formed by Mr. Hamilton H. Druce.

The extensive collection of Lepidoptera, with the exception of the Indo-Australian Moths and types of Palaearctic species, formed by H. J. Elwes, Esq., was added in 1920. The same year saw the arrival of many thousands of Lepidoptera obtained by Mr. T. A. Barns on an expedition made through East Central Africa on behalf of Mr. Joicey.

We must include some very large collections made by Mr. W. J. C. Frost, who visited the Islands of Tenimber, Aru, Key, Misol, Obi and Sula, during 1916--1918. From 1918--1920, Mr. C. Talbot Bowring sent many thousands of specimens from the Island of Hainan, and these were generously presented by him.

During 1920 the brothers Pratt, working in Central Ceram on behalf of Mr. Joicey, sent home a thoroughly representative collection of the Lepidoptera met with in the high mountains of the island.

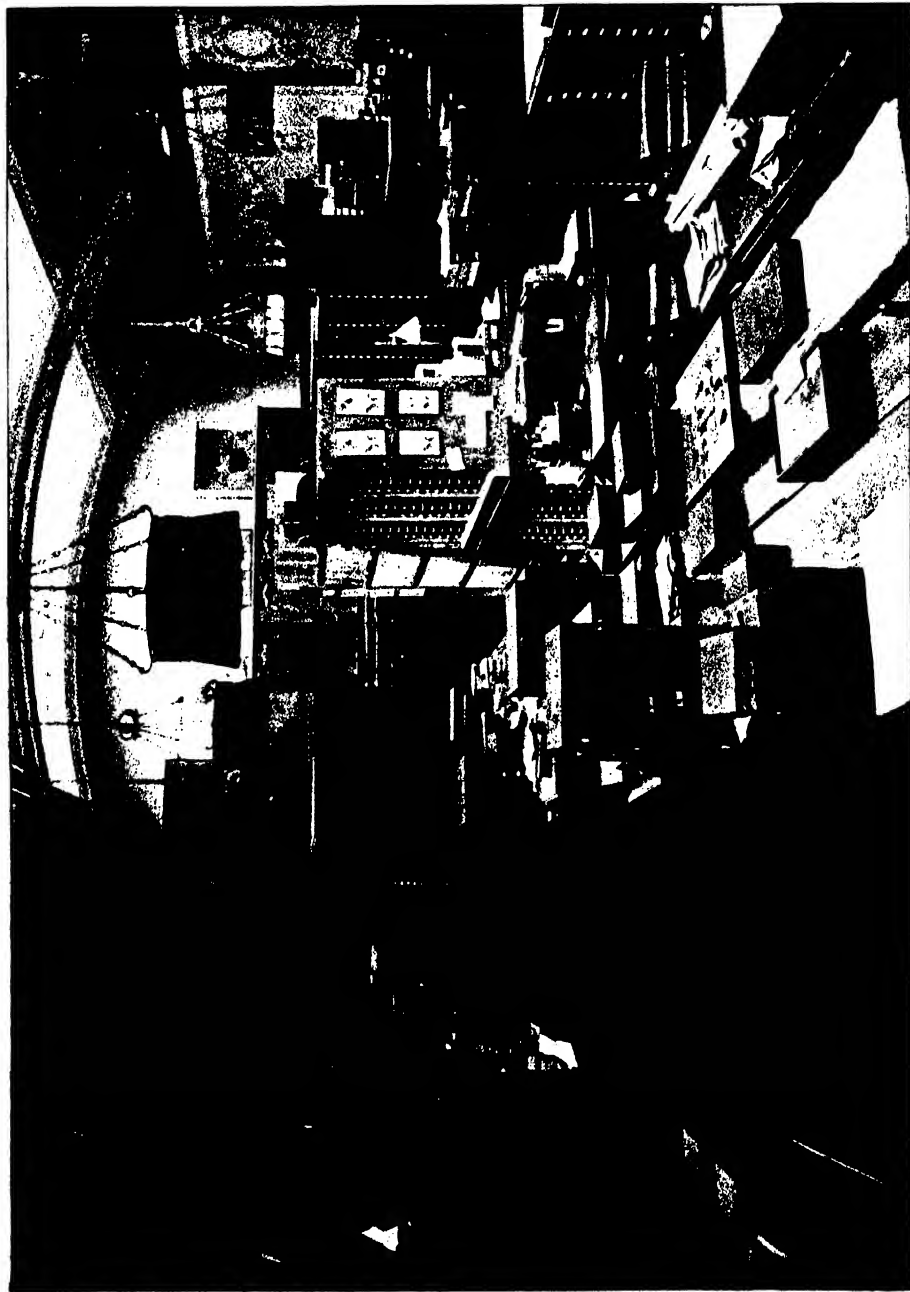
The collection of Rhopalocera formed by Monsieur P. Dognin was acquired early in the present year, and includes the types of species described by him.

Besides the material enumerated, much of a miscellaneous character was added from time to time from all parts of the world.

The collection of British Lepidoptera was also increased very largely from 1912 to 1920. Many rare forms and aberrations were purchased at the sales of certain celebrated collections, and many additions to the local fauna were made by day and night collecting.

Since 1915 the staff of the Museum has been increased to deal with the work entailed by the enormous accessions, and it now numbers seven persons.

To house the increased collections, an annexe was added in 1920. This was adapted from an Army hut over eighty feet long by twenty feet wide, and serves the purpose very well, being insulated from damp



THE HILL MUSEUM. A PART OF THE INTERIOR.

and heated by anthracite stoves. Here was installed a photographic department, under the direction of Mr. H. J. Campbell, with facilities for photo-micrography.

A small laboratory has been arranged in connection with the necessity for performing anatomical studies. A new technique for making preparations of genitalia is being perfected, and a full account of this will be given in a future number of this journal.

3.—GENERAL AIMS.

The primary object of Mr. Joicey in making this collection of *Lepidoptera* is to advance in some way our scientific knowledge. When he sent out Mr. Pratt and his son to Northern Peru in 1912, it was in the hope that some species new to science would be obtained, as well as for the gratification to be afforded by adding largely to the collection. The formation of a large collection has its value, because without access to plenty of material studies can only be incomplete, and results are often erroneous. No proper view can be taken by comparing scattered material. Correct results are more readily obtained with good series of specimens from all localities, provided with proper data, and available in one place.

No apology should be needed for amassing large collections, for research into the problems affecting such variable organisms as *Lepidoptera* is dependent for its success on the availability of large numbers of specimens.

The naming of new forms is a necessary work which must be carried on by all who are possessed of new material, but we are concerned also with other investigations. We consider it important to work out all the material sent by the special collectors, and to prepare a full analysis and a list of the forms met with in each area. Such faunistic studies yield much information on distribution and relationship. Several are in preparation, and we propose to publish the results in this journal from time to time.

Work on the structure of the genital armature has been commenced, and it is hoped that many doubtful questions affecting specific distinctions may be cleared up, and that we may ultimately extend the study in various ways.

The present paper, dealing with the results of the Barns' Expedition, will be followed by one on the *Lepidoptera* of Hainan, and in due course there will appear similar papers on the *Lepidoptera* of the

Schouten Islands, and on collections received from Dutch New Guinea, Waigeu, Mefor, Mysol, Key, Aru, Tenimber, Obi, Central Ceram and the Sula Islands.

It is proposed to monograph the genus *Delias*, and material to this end is being accumulated. Certain studies on Mimicry phenomena are also in contemplation.

4.—PRINCIPLES ADOPTED IN THE CLASSIFICATION OF SPECIMENS.

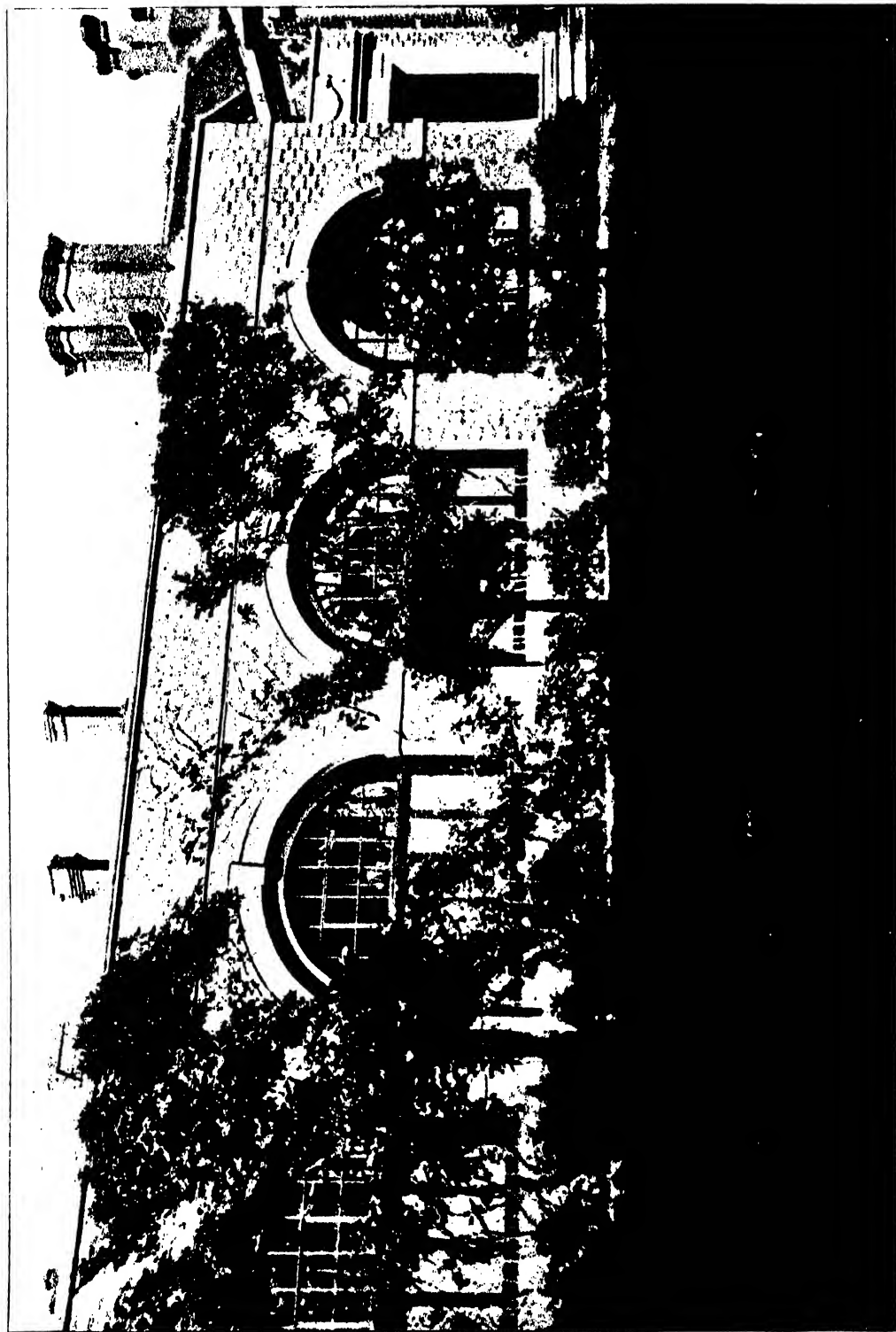
We accept the terminology in use by the majority of systematists, and distinguish between a geographical race, an individual variation, and a seasonal variation. We also agree that a figure of any sufficiently distinct form should be given whenever convenient, but do not consider the absence of such a figure to be entirely prejudicial to the description, and in any case no figure is of value unless accompanied by a description, however brief.

The individuals of a species are grouped under their various races and arranged in geographical order as far as convenience permits. The individuals of each form are grouped according to locality or zoological area, the sexes being sorted in every such series. Any type specimens are placed at the end of a series comprising the form named. The name-label placed at the bottom of a series bears the original type-locality.

Where known forms are absent in the collection, a name-label, with figure if available, is placed in the position of the missing form.

Families are arranged geographically instead of in any so-called phylogenetic order. The phylogeny of the forms of Lepidoptera cannot be said to be correctly understood at present. Not only does the geographical arrangement help us to an understanding of phylogenetic relationships, but it is of great value in finding any desired form in a great collection, and enables one to get some idea of the forms occurring in a given area.

A card-index catalogue of the collection was commenced in 1915. Each card bears the name of the species with its original reference, also the number of the drawer in the collection, and a list of the localities of the specimens. A separate index is made for types. These indices are yet far from complete, but are compiled whenever a group is properly worked through.



THE L USEUM, EXTERIOR

5.—PRINCIPLES ADOPTED IN THE CLASSIFICATION OF TYPES.

The importance of the correct designation of type-specimens is often overlooked by nomenclators, and the describers of new forms are often faced with the difficulty of deciding what specimens exactly represent the previously-described allied form.

The first scientific classification of types was made by Schuchert and Buckman in 1905 and forms the subject of a paper in the *Annals and Mag. Nat. Hist.* for that year, Ser. 7, vol. 16, p. 102. This scheme has been adopted by the Hill Museum in the classification of new forms, and in re-classifying the types of other authors which are contained in the collection.

We take this opportunity of placing before entomologists the following amendment to the paper of Schuchert and Buckman.

PRIMARY TYPES.

ALLOTYPE (A.T.).—"A paratype of the opposite sex to the holotype."—"The Entomological Code." Washington, May, 1912, § 70.

NEALLOTYPE (N.At.).—A specimen described subsequently as the type of the other sex.

This word was suggested by Mr. J. Hartley Durrant to illustrate our definition.

PARATYPE (P.T.).—This term should be accompanied by the sex of the specimen, as P.T. ♂, meaning a specimen of the original ♂ series, or P.T. ♀, for a specimen of the original ♀ series.

A paratype may be a specimen of a series represented by a holotype, an allotype, or by a neallotype.

Besides giving the specimen its proper type label, a method of numbering has been adopted by Mr. Durrant. He gives each specimen a fractional number, the numerator being the number of the individual in the series, the denominator the number of specimens in the series. Thus 2/18 denotes the second specimen in a series of 18. As the original description should indicate the number of specimens, we see no use in noting each one unless they call for special notice.

We propose to apply this method where the original series shows any variation, the number 1 indicating the holotype or the allotype, and succeeding numbers indicating divergence. If there are ten variable specimens, they should be arranged in order of divergence

from the type, and they will bear numbers 2/10, 3/10, etc. If all the specimens exactly agree they will be numbered 1/10. Any specimen can be indicated in the original description by its fractional number.

6.—STUDIES ON THE GENITAL ARMATURE.

Mr. Joicey has equipped a small laboratory in connection with the Museum for the purpose of carrying out work on the genitalia. This is in charge of Mr G. L. Birbel, and all dissections and drawings are by him unless otherwise stated. The morphological differences are also worked out by Mr. Birbel.

A process has been developed whereby dissections can be made without the abdomen sustaining any obvious mutilation. A full account of the technique will be given in a future number of the journal.

It is not possible to carry out dissections of all described forms, as time would not permit, but the new technique enables us to dissect specimens which may otherwise not become available.

The nomenclature employed in describing the organs is the one given by Dr. J. McDunnough, the Canadian Entomologist, vol. xliii, June, 1911.

The terms anterior, posterior, dorsal, and ventral, are used in relation to the whole of the organs, e.g., where the valve is connected with the sternite, this is the anterior end.

7.—THE INCORPORATION OF NEW MATERIAL.

If a collection of insects is built up for scientific study, some care must be taken in the acquisition of material. We endeavour to keep as near as possible to the following plan in making accessions:—

- (1) Forms not represented in the collection.
- (2) Material from a zoological area which is as yet unrepresented in the collection.
- (3) Type specimens of any kind.
- (4) Material provided with proper data, and serving to replace specimens not so provided.
- (5) Forms already in the collection but which are subject to variability.
- (6) Forms already in the collection but which may be replaced by better specimens from the same localities.

Introduction

8.—THE ACQUISITION OF DATA.

Before Entomology became the scientific study which it is now, most specimens in collections were accompanied by no indication of their habitat, and if any such label was affixed, it bore the legend "India," "America," "Amazon," "Peru," "Bogota," etc. These were often erroneous, besides being ambiguous. Students of Entomology very soon found that the more exact the information they obtained as to the habitat, the more accurate would be their studies in classification and distribution. With the formulation of new biological problems, especially the baffling phenomena of mimicry, the need arose for data of another kind to be added.

We point out to our collectors the importance of furnishing adequate data with their specimens, and in 1919 I drew up a schedule of requirements in this respect. This has been sent to our principal collectors, and whilst it may not be complete, it covers the most important points on which information should be sought. We print this schedule below, and would welcome any suggestions in regard to it.

1. LOCALITY.

- (a) If name is not on map give approximate position in relation to a place which is on the map.
- (b) Write a short account of geographical features. This will include the general configuration, the presence of water, and distance from the sea in case of islands.
- (c) Nature of the Flora, noting special types.
- (d) Vertebrate Fauna; abundance or not of birds, reptiles, and mammals.
- (e) If a mountain, indicate which side.
- (f) If a river, indicate which bank.
- (g) Height above sea-level.

2. CLIMATE.

- (a) General remarks.
- (b) Rainfall and humidity.
- (c) Temperatures taken at coolest period, medium period, and hottest time of the day.
- (d) Kind of season: wet, dry, or both.
- (e) Prevailing winds.

3. TIME.

- (a) Day and month when taken.
- (b) Taken in a.m., p.m., or at dusk, or attracted to light at night.

4. HABITS OF ADULTS.

- (a) Usual feeding haunts.
- (b) What species fly together?
- (c) When several forms are feeding or at rest in one assemblage, try to take all by waiting for those that are disturbed to come back. Keep such lots separate.
- (d) Note any protection afforded by coloration, etc., when at rest.
- (e) Note whether conspicuous on the wing, and if can be mistaken for another species.
- (f) Note any bird or animal seen catching butterflies, and what species of butterfly.
- (g) When skinning any birds, note if any remains of Lepidoptera are in the crop. Contents of crops may be sent for examination at home, if not possible in the field.
- (h) Resting attitude.
- (i) Do the sexes fly together, and have they similar habits? Do the males "assemble" to the females?

5. HABITS OF LARVAE.

- (a) Endeavour to rear larvae. (See separate instructions.)
- (b) When adult is known, preserve the larva, both by fixation and by formalin. (See separate instructions.)
- (c) Note coloration when alive.
- (d) Note time when feeding.
- (e) Note if conspicuous or protected.
- (f) Preserve portion of food-plant, and include flower where possible.
- (g) Note month.
- (h) Any habits.
- (i) Any enemies observed.
- (j) Fix any larvae with curious structures.
- (k) Resting-attitude.

6. PUPAE.

Preserve all pupa-cases where the adult is known. Kill live pupae which are nearly ready to emerge, but only of known species.

7. OVA.

Where identified preserve some in 5 per cent. formalin. Label with date.



THE MUSEUM ANNEXE

8. PRESERVING LARVAE.

- (a) *Fixation* for microscopical examination.

Take specimens which have just moulted, or which are not going to moult soon. Drop them in fixative.

After a few hours large specimens (exceeding 2 inches in length), are cut into two or three pieces with a sharp razor at junction of segments. All are transferred to fresh fixative for twenty-four hours.

Transfer to fresh 90 per cent. alcohol for three days.

Put up in fresh 90 per cent. alcohol in tubes, label, seal tube.

- (b) *Preservation as Specimens.*

Kill by drowning and put up in 5 per cent. formalin. Use no alcohol, as it takes out colour.

- (c) Keep species and different stages separate.

- (d) Fix larvae whose adults are known, and also any others which present curious structures.

- (e) Put all specimens where adults are known in formalin, and duplicates if available of any others which have been fixed.

9. PRESERVING ADULTS.

- (a) Drop into fixative and after a few hours remove abdomen, wings, thorax, and head, and place all in fresh fixative.

After twenty-four hours transfer all to 90 per cent. alcohol.

After twenty-four hours transfer to fresh 90 per cent. alcohol.

After three days put in fresh 90 per cent. alcohol in stoppered bottles.

- (b) Keep species separate; but several specimens of a species can be put in same bottle. Keep some specimens entire.

- (c) Fix specially any which are observed to have emerged from pupa, both immediately after emergence and also when wings are dry. These facts must be noted on a label.

- (d) Fix butterflies of all groups and any strange moths.

- (e) Gravid females of common specimens may be fixed.

10. REARING LARVAE.

Prepare several cages and keep clear of ants.

Larvae of one kind, or ova, are placed in one cage which is called, say, 1.

Note when any are going to moult, and as soon as they have done so, remove these to another cage which is called 1.1.

As these moult, remove to another cage and call this 1.2;

and so on to the pupae, these being removed to a cage for hatching.

As the larvae in the first cage change they are passed through the other cages.

As successive changes are made specimens should be removed for fixation and preserving, and a brief description of the coloration in the last instar should be made.

The cage numbers used for the first series bred will be 1, 1'1, 1'2, etc., the decimal showing which stages have been passed through. The next series bred will be 2, 2.1, 2.2, etc. These numbers must be put on the labels accompanying preserved specimens.

Always note when hatched from the egg.

11. BREEDING.

It is very desirable to obtain the ♂ and ♀ for eggs and larvae, so that one can be sure they have not paired with any other form.

The parents must be included in the batch of specimens bred, other specimens being kept, no matter in what condition they may be, and the dates of emergence should be noted.

A pair should be used to keep eggs for future generation, and as many generations should be bred as convenient, but at least three or four. Each generation should be kept separate.

12. RECORDS.

Each package of specimens for transit home must bear a number corresponding to one in a book.

This book shall have numbered pages with a tear-off original and carbon copy.

The page number will be the number of the collection. On it will be written contents of package, where collected, number of specimens and any notes desirable.

The tear-off page will be sent in covering letter.

All letters will be written in similar carbon duplicate book with page numbers.

Labels can be written with waterproof Indian ink.

Carry a good scale map and chart the collecting grounds; also route taken.

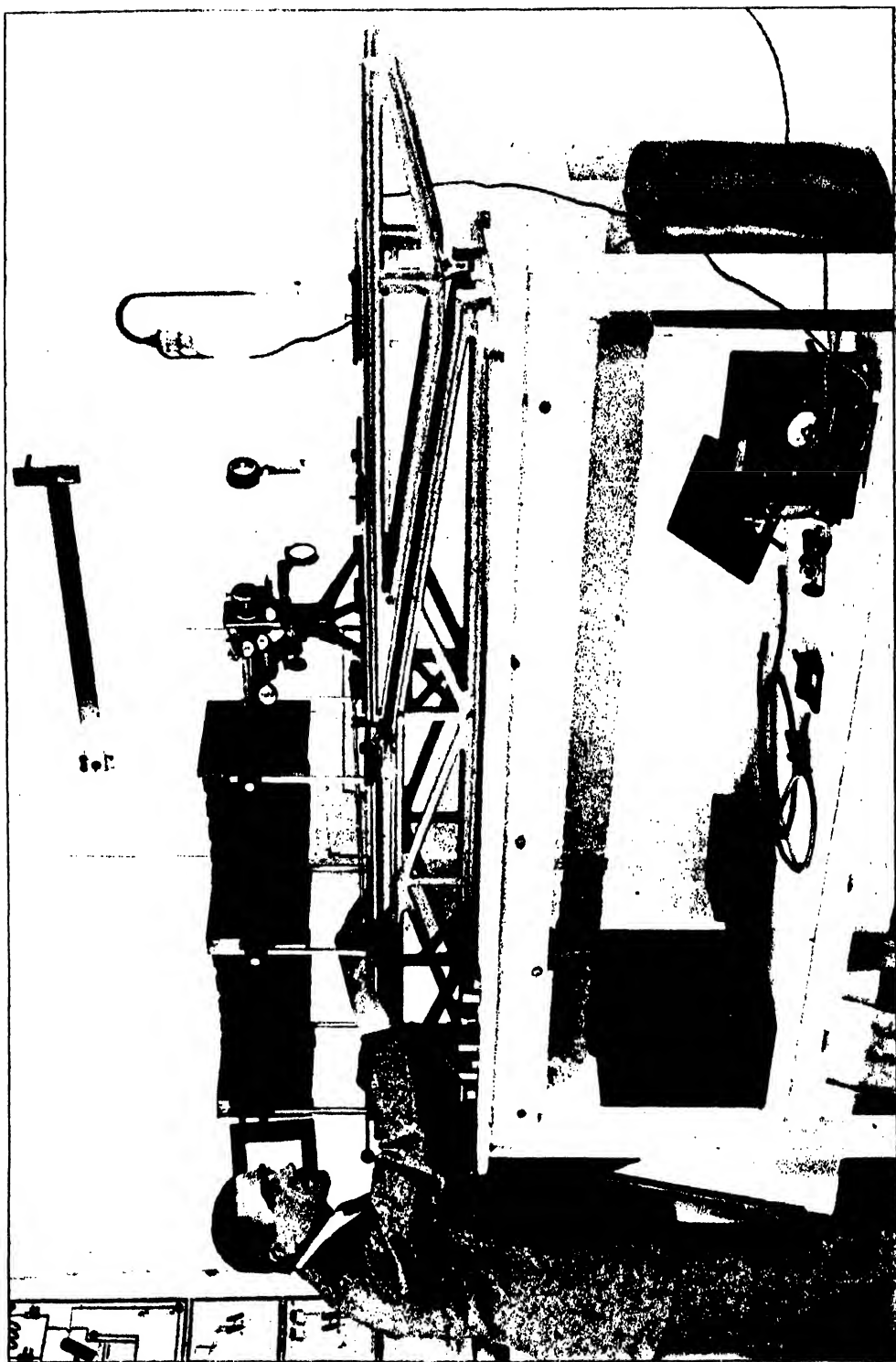


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A total of 551 new forms is contained in the foregoing publications. There is also included the description of the other sex of twenty-four known forms, and the description of three aberrations and one gynandromorph.

III.—EUPLOEINES FORMING MIMETIC GROUPS IN THE ISLANDS OF KEY, ARU, TENIMBER, AUSTRALIA, AND FIJI.

With an Appendix on the IDENTITY of Certain Forms of EUPLOEA, and the Description of a New Form of Female, and of a New Species.

BY GEORGE TALBOT, F.E.S.

(Plates I—IV.)

This paper has been prepared at the suggestion of Professor E. B. Poulton, F.R.S. It is important that as many facts as possible bearing on the subject of mimicry should be published, and illustrations given of the resemblances described. It is only by the accumulation of a vast body of facts that we can hope to arrive at a satisfactory solution of the problems presented by the wonderful phenomena grouped under the term "mimicry."

This paper could not have been written if I had not the rich material at the Hill Museum to work upon, and my thanks are due to Mr. J. J. Joicey for enabling me to spend time on this study, and for his generosity in bearing the cost of the plates. I am also indebted to Professor Poulton, who, in the midst of his many activities, found time to look over the manuscript and to make helpful suggestions.

The material in the Hill Museum was especially suitable to the present study, because we were able to ascertain the total number of each form sent home from Key and Tenimber. Mr. W. J. C. Frost collected in these islands for Mr. Joicey, and the collection obtained was entirely representative. We can therefore see in what proportion the mimetic forms exist.

As a result of this investigation we found reasons for doubting very much whether certain species with a sexual brand on the fore wing were really distinct from forms in which this brand was absent. This point, however, does not affect the question of mimetic likeness on the same island, as the species concerned are not found together.

A.—KEY ISLANDS GROUP. (Plate IA.)

The Key Islands combination shows the greatest development of white markings. There is no such dominant white coloration in the species of the Aru Islands, where the tendency is in the other direction, and the forms are dark. The development of white coloration in the Key Islands is also noticed in *Danaïs plexippus kyllene* Fruh., in *Cethosia chrysippe insulata* Butl., and in the female of *Troides hecuba*. The pattern of these forms is quite unlike that of the Euploeines, but the *Cethosia* mimics the *Danaïs*. Some other species of *Euploea*, which would form excellent members of the Key Island group, exist in places where no other white-banded butterfly is known to occur, as in New Guinea and the Solomons. Such species must presumably have derived their pattern from their progenitors in a locality where the mimetic stimulus was in operation. It may be that in some past epoch, this white-banded combination was spread over a larger land area, and that ultimately some members of it were cut off from their associates by geographical changes.

The allies of these white-banded Key Island forms all exhibit some tendency to white scaling in the distal area of the wings. It may be inferred, therefore, that given the existence of a common white-banded *Euploea*, as *assimilata* Hopff., on Key, other species with this colour-tendency would develop it.

On an island, mimetic likeness should be more readily attained. If a conspicuous species becomes common, the limit to its range determined by the sea would serve to render the species more conspicuous owing to the occurrence of more individuals in any part of the island. Just as species become changed by long continued isolation in islands, so mimetic likeness should undergo a similar change and become more intensified.

It is possible that the large white patch of the Danaine and the white patches on the wings of the *Troides hecuba* female, have some biological connection with the prevailing white coloration in the Euploeines and *Hypolimnas*, and we may perhaps look to the intensifying insular factor for an explanation. We must also not overlook the possibility that these forms may have derived their white coloration, or at least the tendency, from more ancient forms under different conditions. Both suggestions may be combined in seeking for a solution to the problem, for selection in the direction of mimicry would utilize all suitable variations, including those which are atavistic.

The group discussed is composed of the following species (pl. 1A):—

Euploeinae.

Crastia Group, *climena eurypon*
Hew. (figs. 1, 2).

Calliploea Group, *hopfferi* Feld.
(figs. 3, 4).

Salpinx Group, *assimilata* Feld.
(figs. 5, 6).

Nymphalidae.

Hypolimnias deois hewitsoni
Wall. ♀ (fig. 7).

Hypolimnias alimena heteromorpha
Rob. ♀ (fig. 8).

The number of each species obtained by Mr. Frost is as follows:—

<i>E. climena eurypon</i>	...	...	37 ♂♂	35 ♀♀
<i>E. hopfferi</i>	...	...	3 ♂♂	2 ♀♀
<i>E. assimilata</i>	...	...	45 ♂♂	24 ♀♀
<i>Hyp. deois hewitsoni</i>	...	...	1	
„ <i>alimena heteromorpha</i> ♀	...	...	21	

The relative abundance is as follows:—

			Percentage of	
			Total of <i>Euploea</i>	Total of <i>Euploea</i> and <i>Hypolimnias</i>
<i>E. alimena eurypon</i>	...	...	48.9	42.6
<i>E. hopfferi</i>	...	...	3.4	2.9
<i>E. assimilata</i>	...	...	46.9	40.8
<i>Hyp. deois hewitsoni</i>	...	...	—	0.5
„ <i>alimena heteromorpha</i>	...	...	—	12.4

The specimens were collected from December to March, and in June and July. Most of the *Euploeines* were obtained from January to March, as also the *Hypolimnias*.

Danais plexippus kyllene Fruh. (pl. IVA, fig. 2) and *Cethosia cydippe insulata* Butl. (pl. IVA, fig. 1).

The resemblance between these two species already noticed is very striking and is interesting on account of the development of white coloration. The white area is confined to a large apical patch on the fore wing; in both species this patch is larger than it is in any other form of the two genera, excepting in the *Danais* form *laratensis* Butl. inhabiting Tenimber, and here the patch is a little larger. There is no mimic of this *Danais* in Tenimber. It is curious that *Cethosia cydippe* should be absent from Tenimber, although ranging to Australia and the Bismarck Islands. If it existed before the coming of the *Danais*, which is a western species, it may have died out. The presence of the

Danaïs would, on the mimetic theory, have conferred some advantage on this *Cethosia*, which possesses a white subapical band in all its forms. On the Key Islands the *Cethosia* is rare, there being only fourteen collected to eighty-seven of the *Danaïs*.

Among the three Euploeines it is doubtful whether any one may have served as a centre of convergence. Although *hopfferi* is the rarer it possesses the least dyslegnic white marginal bands, but such bands are developed from sharply-defined spots, as will be seen by comparing other forms of *Calliploea*, and are themselves by no means sharply defined.

In *assimilata* the bands are less clearly defined than in the two other species, and in both sexes the bands are equally dyslegnic. The white bands are here the result of a suffusion of white scaling, this tendency being exhibited by other forms of *Salpinx*.

Taking *eurypon* as a possible centre of convergence, we find it only slightly predominates in numbers over *assimilata*. The white bands of *eurypon* are a little more clearly defined than in *assimilata*, the band on the fore wing of the female being more defined than on the male fore wing. Other forms of *climena* show a white band on the hind wing and a certain development of the band on the fore wing. As in *assimilata* the development of these bands is by a diffusion of white scaling.

It would appear, therefore, that neither species is by itself responsible for the pattern of the others, and since all show a fairly close approach to one another, the development has probably proceeded fairly equally among all three, the ancestral tendency becoming intensified through the factors present in insularity.

The same may be said of the two *Hypolimnias*, the female of these species often showing nearly as much white distal coloration in other parts of their range. It will be noticed that the band on the fore wing of the *alimena* form is as clearly defined as the band on the *Calliploea*, but in both cases these bands are developed from sharply-defined spots. The band on the hind wing of both the *Hypolimnias* is less clearly defined and is developed by suffusion.

There remains the possibility that *Danaïs affinis vorkeinus* Rob. may have served as a centre. This species was sent to the number of 142 and may therefore be said to predominate over either *Euploea* and to be about equal to the number of all the three white-banded Euploeines flying at the same time. This *Danaïs* exhibits a remarkable constancy of form and only differs from the typical Australian *affinis* Fabr. in the larger size of the spot in cellule 3 of the subapical band.

Although there is no resemblance between this Danaine and any other Key Island butterfly, it is interesting as exhibiting an increase of white coloration.

B.—ARU ISLANDS GROUP. (Plate IB.)

The forms found on these Islands show on the whole a darker coloration than those of Key. A white-banded combination exists, but the individuals composing it are not common. Probably these forms centre around the white *Taenaris catops* Westw. (fig. 6), of which 215 specimens were sent, the presence of *Danaïs affinis* Fbr., of which 90 specimens were sent, being also a contributory factor.

The following forms composing this group were collected from January to May:—

Danaïs affinis Fbr. Ninety specimens. This does not resemble the next three in pattern.

Euploea alimena vicina Feld. (figs. 1, 2) ♂ ♀.

E. confusi grayi Feld. ♀ f. nov. (fig. 3). One specimen of this very remarkable form.

Elymnias agondas aruana Fruh. ♀. Light form: twenty specimens, fig. 4. Dark form: twenty-five specimens, fig. 5.

The *Elymnias* ♀ light form, and the *Euploea grayi* ♀, are probably associated with *Taenaris catops* West., of which 215 specimens were sent.

In association with this we have the white ♀ form *onesimus* Hew. of *Papilio aegaeus ormenus* Guér; of this ten specimens were sent and twenty-six of another form allied to *leporina* Jord., in which the discal patch of the hind wing is smaller than in any other form of ♀.

The ♀ *Hypolimnas alimena* is represented on Aru by a form more typical of those occurring in most other localities. The white-margined hind wing is only seen in Key and Tenimber specimens, but the tendency is exhibited in Moluccan individuals. It is true that Felder figured a form (Reise Nov. p. 414, t. 55, figs. 5, 6) which he described from Aru from a specimen identical with the Key Island form, but we have not received one like it from Aru, and neither have we seen another similar specimen known to have come from there. We have one specimen with a very pale-margined hind wing and a pale brown margin to the fore wing; this is quite similar to the form found on Banda. It is certain that Felder's *polymenā* is not typical of Aru specimens.

We may infer that the *Taenaris* has been a more recent addition to the fauna, and that the development of a similar white coloration among other butterflies has not proceeded so long on the Aru as on the Key Islands.

There is also the possibility that an older association has been partly broken up by the attraction of some members to the new model. We can recognize the *Euploea climena*, perhaps the *Hypolimnas* ♀, and the white margins of *Euploea confusa* ♀ form as possible survivors of an older association. The *confusa* form exhibits an interesting combination of markings. The central white area of the fore wing is perhaps an older development than the white margin, as the tendency to a pale discal area is seen in ♀ ♀ from all parts of the species' range. The white margin would appear to have resulted from association with other white-margined butterflies. If this is so it is strange that no allied form occurs on the Key Islands. We are driven to the conclusion that this form originated as a member of an Aru association of which only the vestiges remain.

Three other *Taenaris* are found on the Aru Islands, and two of these are of interest, as they closely resemble one another. They are to be distinguished, however, by several points and also by the genitalia. *T. artemis myopina* Fruh. (pl. IIA, figs. 1, 2) is distinguished from *T. myops* Voll. (pl. IIA, figs. 3, 4), by the absence of black androconia on the inner margin of the hind wing. The dark ♀ form of the *Elymnias* closely resembles these *Taenaris*.

The third *Taenaris* is *dimuna* Hew., but we have nothing mimicking it on the Aru Islands, where it appears to be very rare. On New Guinea this species is mimicked by members of the *Hyades* group.

C.—TENIMBER ISLANDS GROUP. (Plate IIB.)

The dominant *Euploea* on Tenimber is *eleutho sacerdos* Butl. (figs. 1, 2), and this formed 84.5 per cent. of all the *Euploeas* collected. This species belongs to the group which bears one sexual stripe on the fore wing. This stripe exhibits some variation in size in some species, and there is a probability that some forms placed in the group without sexual stripes may be forms of species which possess these stripes.

The next species in order of frequency is *visenda* Butl. (figs. 5, 6), belonging to the *Calliploea* group, which formed 13.4 per cent. of the whole.

A third species is *compta* Rob. (figs. 3, 4), belonging to the group without any sexual stripe on the fore wing. This is one of the rarest species in the genus and represented only 1.1 per cent. of the whole. This species bears a closer resemblance to *visenda* than it does to *sacerdos*, whilst in structure it is probably nearer the latter.

A fourth species is *peloroides* sp. nov. (fig. 8 ♂, 9 ♀), a description of which is given in the appendix. It is rarer than *compta* and formed only .8 per cent. of the whole. It belongs to the *Stictoploea* group and bears a very close resemblance to *sacerdos*.

Among the butterflies of other families found on Tenimber, there is only one which can be said to enter into the Euploeine combination. This is the ♀ of *Hypolimnias alimena forbesi* Butl. (fig. 7). This formed 15 per cent. of the total of *Euploea* and *forbesi*.

We have seen that on the Key and Aru Islands the pattern of this *Hypolimnias* ♀ is accentuated in combination with a white-margined group of Euploeas.

Variation in the Spots of Sacerdos.

When first examining the series of this species, it was noticed that the spots on the fore wing were of obvious variability in size, and that the discal spots appeared to be more variable than the subapical ones. At the time the importance of such a variation was not considered but for the purpose of the present investigation, the extent of this variation requires to be ascertained more exactly.

If one group of spots were less variable than the other we should incline to think that the less variable were the more ancient and the more important in preserving the mimetic likeness. Hence the spots which vary most would be those which enter least into the mimetic combination.

It is evident that more opportunity for mimetic approach would occur in the more variable spots. As the mimetic likeness became stronger the variation would become less, and the more perfect the likeness the less variation should be found in the spots composing the whole pattern. In cases of close mimetic approximation little variation is noticed in models and mimics from the same locality, but the once variable mimic shows in the dyslegnic edges of its pattern the existence of the varietal tendency.

We hope to return to this aspect of variation in a later paper when the spots of a large series have been measured. Then it may be shown

whether the discal spots are actually more variable than the subapical ones.

The number of each species collected is as follows :—

<i>E. eleutho sacerdos</i> Butl.	...	...	...	296
<i>E. visenda</i> Butl.	...	...	...	47
<i>E. compta</i> Rob.	...	..	...	4
<i>E. peloroides</i> , sp. nov.	...	...	...	3
<i>Hypolimnas alimena forbesi</i> Butl. ♀	...	...	...	66

The model is evidently *sacerdos*. The spots on the fore wing of *compta* are dyslegnic as is also the band on the hind wing of the *Hypolimnas*.

D.—AUSTRALIAN GROUP. (Plate IIIA.)

In Australia, *eleutho* has become very specialised and forms probably a second species, *corinna* McLeay, just as a certain Polynesian species has a distinct representative in Fiji. The group is constituted as follows :—

- E. (Crastia) corinna* McLeay, figs. 1, 2.
- E. (Calliploea) tulliolus darchia* McLeay.
- E. (Calliploea) hymens niveata* Butl.
- E. (Crastia) eichorni* Stgr., figs. 6, 7.
- E. (Stictoploea) sylvester* Fbr., figs. 4, 5.
- E. (Stictoploea) pelor* Doubl., fig. 3.

E. pelor is regarded by Waterhouse and Lyell ("The Butterflies of Australia") as a race of *sylvester*. This conclusion is borne out when mimetic comparisons are made. In *pelor* the fore wing has the two discal spots placed farther from the margin, the lower one being placed as in *corinna*. The band of the hind wing is broken up and clearly resembles the band in *corinna*. The spots in *pelor* are dyslegnic, and in the form *dardanoides* W. and L., all the markings are dusky.

E. sylvester pelor occurs at Port Darwin, Daly R., Roper R.

E. sylvester f. *crithon* Misk., occurs at Cape York and on Darnley Islands.

This form is without spots, and intergrades exist between it and the typical form. Waterhouse and Lyell "consider it probable that *crithon* is identical with *Stictoploea immaculata* Butl., from New Guinea."

E. sylvester f. *dardanus* Misk., occurs at Cape York—and on Prince of Wales Island, Bank Island, and Thursday Island. This form is

more like *pelor*, but the two discal spots on the fore wing are not quite so far from the margin, though they are more proximal.

E. sylvester sylvester Fabr., occurs from Thursday Island to Townsville and Mackay.

Both *corinna* and *sylvester* are variable in the north, and are nearly constant in the southern part of their range.

Typical *sylvester* is mimicked by *eichorni*, which occurs in the same area, and is rarer than either *corinna* or *sylvester*.

Typical *corinna* is mimicked by *sylvester pelor* and *sylvester dardanus*.

It looks as though the *sylvester* f. *crithon* acquired markings in association with *corinna*, and that these markings were intensified by association with *eichorni*.

E.—FIJI ISLANDS.. (Plate IIIB.)

This combination is only represented by two species of *Euploea*—*helcita eschscholtzi* Feld. (fig. 3), and *proserpina* Butl. (figs. 1, 2), and is similar to but less white-marked than the Tenimber group. These were first discussed by Mr. J. C. Moulton in the Trans. Ent. Soc. 1908, p. 603, and figured on pl. 34. The discal spot on the fore wing of *proserpina* was held to have been lengthened inwards so as to afford a superficial resemblance to the chief spot of its model. The discussion of these species was continued by Professor Poulton in the Proc. Ent. Soc., 1919, pp. lxxix-lxxxi, and a third mimic introduced, *Danaïs (Tirumala) neptunia* Feld. (pl. IVA, fig. 3). Professor Poulton showed that the females were better mimics than the males, that the fore wing pattern of the female *proserpina* was more highly dyslegnic, that of the male less so, and that of the model still less so. He further suggested that *proserpina* was a model for the other *Euploea* as regards its hind wing pattern.

At a meeting of the Entomological Society on November 17, 1920, Professor Poulton exhibited further instances of the mimetic association between two Euploeines and one Danaine in Fiji (Proc. Ent. Soc., 1920, pp. lxxx-lxxxiii). He showed that the female Danaine resembled the Euploeas more closely than the male. It was also recorded that the two Euploeas fly together in different parts of Viti-Levu and on adjacent islands, and that they are often accompanied by the *Tirumala*. There was also evidence that the model "*eleutho*" was at certain times and places more abundant than its mimic *proserpina*.

The species referred to as *eleutho* Quoy, in these accounts of the Fiji group, should be called *helcita eschscholtzi* Feld. The synonymy and identity of this and other forms is given in an appendix to this paper.

A third *Euploea* occurs on Fiji, which should enter into the combination, but we have seen no specimens of it. This is *E. (Calliploea) tulliolus forsteri* Feld. It must be very rare. We have seen already that the mimetic forms of this group of *Euploea* are rare on Tenimber and Key.

It is interesting to note that *E. proserpina* is rather different in pattern from any other *Euploea*, yet in point of structure it is related to either *pakullei* Butl., or to some other form of the *duponcheli* group.

We may note here that but one other species of *Euploea* occurs on Fiji, *E. nemertes macleayi* Feld. This is darker than the others.

The discovery by Professor Poulton that mimetic forms could generally be distinguished, model from mimic, by the eulegmic pattern of the former and the dyslegmic pattern of the latter, is of great importance in determining the bionomic relationship between such forms. Where a mimetic resemblance is found to occur we are able to confirm the other evidence which points to one species being the model and the other the mimic. It also helps in establishing the distinction between model and mimic, a distinction at least specific but more often generic or even indicating a larger group.

Where a form is found to be structurally different from allied forms and another form likewise structurally different is found to resemble it, we may conclude that such a form is very distinct and has been distinct for a considerable time, and that when a number of forms with similar characters are mimicked, each in its own area, they would constitute a good genus.

The recognition of mimetic resemblance is therefore an aid to the systematist.

It is doubtful whether we are correct in considering the *Euploeinae* and *Heliconiinae* as representing each a single genus. The number of genera made by Moore for the *Euploeinae* must in any case be considerably reduced, since these genera were based on secondary sexual characters alone. The grouping made by Fruhstorfer in Seitz's *Macrolepidoptera* is more probably correct, but in the case of *Crastia* it is doubtful if this can be divided. The existence of mimetic forms with a characteristic wing-shape and invariable sexual secondary characters, point to a generic association. Thus we may distinguish as genera *Crastia*, *Calliploea*, and *Salpinx*.

Any interpretation we have made of the facts brought forward in this paper must be taken as entirely suggestive in the absence of evidence that the aposematic pattern confers protection on the individuals in the areas concerned. Nevertheless, the larger the body of observed facts which are consistent with an hypothesis supported by such evidence in other areas, the greater the probability that the hypothesis is valid.

APPENDIX.

A. THE IDENTITY OF SOME FORMS OF *Euploea*.

1. *Euploea eleutho* Q and G. (pl. IIIB, fig. 6).

Some confusion has existed as to the identity of this species, due chiefly to its remarkable resemblance to *helcita* Bdv., especially in the ♀.

This species was first made known by Quoy and Gaimard, who figured it in Freycinet's Voyage, pl. LXXXIII, fig. 12 (1815). The text of this work was not published until 1824, when the authors gave a description of *eleutho* on p. 554, and indicated the locality as Guam, in the Marianne Islands. They say: "Nous n'avons rapporté que des mâles. Ils ont aux ailes supérieures, comme plusieurs de leurs congénères, une raie longitudinale plus claire que le fond. Ce papillon est très répandu aux Mariannes; on dit même le considérer comme l'espèce la plus commune. Il se plaît sur les fleurs d'un petit arbrisseau qui croît sur les bords de la mer et forme des buissons touffus."

Prior to the publication of the text of Freycinet, Godart, in his Ency. Méth. Supp. ix, p. 815, published a good description of *eleutho*.

In Voy. Astrolabe, published in 1832, Boisduval describes *eleutho* on p. 100, and gives Tahiti as an additional habitat. He does not mention the stripe of androconia on the fore wing, and it is evident that he had either the ♀ before him or specimens of *helcita*, which he supposed were ♀ ♀ of *eleutho*. (It was not until 1859 that Boisduval described *helcita* as another species, recognizing that the form from New Caledonia was rather different from *eleutho* and similar forms elsewhere.)

Monsieur Charles Oberthür has very kindly sent me some interesting documents in Boisduval's own writing. I quote from one of these on *eleutho*: "Cet auteur" (Godart) "dit qu'il n'a vu que des mâles, mais nous pouvons affirmer que les femelles ne diffèrent que par l'absence de

l'impression matte. Elle se trouve dans les îles Mariannes. Nous en avons aussi reçu des examplaires de Taïti et de Tonga-tabau."

It is clear that Boisduval confounded *helcita* with *eleutho*, although he had seen the original specimens of Freycinet and labelled the type *eleutho*, probably giving the name for Quoy to describe.

In 1866, Butler in the Proc. Zool. Soc., p. 300, correctly identifies *eleutho*, but in succeeding papers he confounds it with *helcita*.

Moore, in his monograph of the Euploeinae in the Proc. Zool. Soc., 1883, correctly identifies *eleutho*, and places it in his group with one sexual mark on the fore wing. He however gives Samoa and the Ellice Islands as additional habitats, for specimens in the B.M. He again evidently took these specimens of *helcita* for ♀ ♀ of *eleutho*.

Finally, on the publication of the Euploeinae in Seitz's Macrolepidoptera in 1910, vol. ix, Fruhstorfer distinguishes between *eleutho* and *helcita* in their different habitats, and correctly defines the species.

The type of *eleutho* is in the Paris Museum, and through the kindness of my friend Monsieur F. Le Cerf, I have recently been able to examine it, and to look up the rare work of Freycinet in which the species is figured and described.

Two specimens are labelled as types, one with the ticket "Guam" and the other with "Taïti." The Guam specimen must be regarded as the holotype, as no mention of Tahiti is made in Freycinet and this locality is probably erroneous.

Besides the types, the Paris Museum contains a series of twenty-five ♂♂ and one ♀, all collected in 1887-1888 by Alfred Marche, on the Islands of Guam, Saypan, Rota and Umata. There is also one ♀ without locality, from the collection of Lacordaire. The series is very constant, and the ♀ only differs from the ♂ in the absence of the stripe of androconia.

Through the kindness of Monsieur Le Cerf, we are able to figure on pl. IIIB a ♂ of *eleutho* from Rota.

As illustrating the extraordinary resemblance between this species and *helcita* Bdv., we figure on plate IIIB two females, one of *eleutho sacerdos* Butl. (fig. 4) from Letti Island near Timor, and one of *helcita walkeri*, Druce (fig. 5), from Tonga.

Eleutho is characterized by the outer edge of the discal spot in 3 being straighter and more sharply-defined and the second discal spot proximally lengthened. We can see no other constant difference between this and *helcita*.

It seems probable that these supposed species may be one and the

same thing. The two are not known to fly together, and no form of *eleutho* is known east of 150° E. long., and no form of *helcita* west of 160° E. long. It does not appear improbable that the presence or absence of the sexual stripe may be geographical. We have already noticed variation in this sexual stripe, and it is sometimes absent in specimens of a series from the same locality, or it may appear in a species which normally does not show it.

The relationship between *eleutho* and *helcita* is perhaps indicated by *whitmei* Butl. from the Loyalty Islands, and *schmeltzi* H.S. from Samoa, which resemble the darker forms of *helcita* although they possess a sexual stripe in the male.

The synonymy of *eleutho* is now as follows:—

Danaïs eleutho Quoy and Gaimard, Freycinet's Voy. Planches, pl. 83, f. 12 (1815); texte, p. 554 (1824) (Guam). Godart, Ency. Méth. Supp. ix., p. 815 (1823). Boisd. Voy. Astrol., p. 100 (1832) (partim.—Guam). Butler, P.Z.S., p. 300 (1866). Moore, P.Z.S., p. 272 (1874) (Guam). Fruhstorfer, Seitz: Macrolep., ix, p. 241 (1910).

2. *Euploea helcita* Boisd. (pl. IVB, fig. 6).

This species was described in 1859 by Boisduval in the Bull. Ent. Soc. France, Ser. 3, vol. 7, p. 156, from a specimen from New Caledonia. Boisduval, in his description, does not give the sex, and says: "Appartient à ce groupe propre en grande partie aux îles de l'océan Pacifique, dont les males sont caractérisés par une raie luisante, glabre, sur le bord interne des ailes supérieures."

As this description appeared to complicate the question of *eleutho* and *helcita*, I asked Monsieur Oberthür if he would examine the type in his collection. He very kindly wrote and gave me much valuable information. The type is a male, and Monsieur Oberthür says: "*Helcita* manque sur le dessus des ailes de 'cette raie luisante, glabre,' que Boisduval invoque comme caractéristique du groupe."

And further: "Boisduval qui décrit un ♂ de *helcita*, omet, au cours de la description, de dire que cette 'raie luisante, glabre' en dessus fait défaut à *helcita*. De plus, Boisduval s'abstient, dans la description de *helcita*, de signaler les grosses taches blanches extracellulaires aux ailes supérieures. Il est vrai qu'il compare 'au port et à la taille de l'*eleutho*,' qui présente à peu près les mêmes grosses taches."

Butler, in his monograph in the Proc. Zool. Soc., 1866, believed *helcita* to be a local race of *eleutho*, as Boisduval's description would lead one to suppose.

The synonymy will be as follows:—

Euploea helcita Boisd., Bull. Soc. Ent. France, Ser. 3, vol. vii, p. 156 (1859) (New Caledonia).

Euploea eleutho Boisd., Voy. Astrol. p. 100 (1832) (*partim*—Tahiti) (*nec.* Q. & G.) (= *f. walkeri* Druce).

Euploea eleutho Butler, P.Z.S. p. 276 (1874) (South Seas). l.c. p. 297 (1878) (Ellice Islands) (= *f. distincta* Butl.); Ann. Mag. Nat. Hist., Ser. 5, vol. xiii, p. 343 (1884), (Fiji) (= *f. eschscholtzi* Feld); (*nec.* Q. & G.).

We figure the following forms of *helcita* to show the range of variation. This kind of variation is not found in *eleutho*:—

helcita helcita Bdv. New Caledonia (pl. IVB, fig. 6).

„ *walkeri* Druce (= *matilica* Fruh.). Tahiti, Tonga (pl. IVB, figs. 1, 2).

„ *intermedia* *f. indistincta* Moore. Cook Is. (pl. IVB, fig. 3).

„ „ *f. unicolor* Druce. Cook Is. (pl. IVB, fig. 4).

„ *lilybaea* Fruh. ♂. New Hebrides (pl. IVB, fig. 5).

3. *Euploea proserpina* Butl.

This species is treated as a race of *eleutho* by Fruhstorfer in Seitz's *Macrolepidoptera*. We believe it to be a distinct species. The hind wing is more oval than in *eleutho*, and the margin is not undulate as in that species; the sex-mark is shorter. It is more obviously allied to the *duponcheli* group, and may come near *pakullei* Butl., from the New Hebrides.

I recently had an opportunity of examining the type of *boisduvalii* Lucas in the Paris Museum. This is certainly an aberration of *proserpina* with the spots clouded over. The type is labelled "Australie," and is a ♂, but nothing like it is known from Australia. Monsieur Le Cerf informs me that the specimen was sold to the Museum with the label "Australie" by a Monsieur J. Verreaux, a dealer in Paris.

This specimen shows the elongated discal spot, and is more likely to have come from Fiji, where the *helcita* form is common.

No similar specimen exists in the Paris Museum, in the British Museum nor in the Joicey collection.

We consider that the evidence is sufficient for sinking *proserpina* Butl., as a synonym of *boisduvalii* Luc., but the latter name can still be retained to indicate the common white-spotted form.

E. boisduvalii Luc., Rev. Zool., p. 321 (1853) ("Australie").

E. boisduvali f. *proserpina* Butl., P.Z.S. (p. 300) (1866) (Fiji).

E. herrichii Feld.; Reise Nov. Lep. ii, p. 344, t. 39, figs. 3, 4 (1867).

4. *Euploea pelor* Doubl.

We must correct the statement made by Fruhstorfer on this form in Seitz's *Macrolepidoptera* ix, p. 249. He records that *pelor* was never found in Australia again, and as he had a female form from Babber in Timor-Laut, "this is pretty certainly the true locality of the species"! Specimens which we have from Australia do not agree with Fruhstorfer's description, which was evidently made from the Babber Island specimen, and must represent something else. They agree, however, with Doubleday's figure.

This form is correctly treated and again figured by Waterhouse and Lyell in "The Butterflies of Australia." They regard it as a race of *sylvester* Fbr.

B. A NEW FORM OF *Euploea confusa grayi* FIELD, AND A NEW SPECIES.

E. confusa grayi ♀ f. *mimetica* f. nov. (pl. IB, fig. 3).

Fore wing with a large white discal patch, clearly defined distally and shading into brown basally, extending from the submedian to vein 4, being nearer the margin in cellule 2, and also extending along the lower margin of cell. A submarginal white band leaving a narrow margin of ground-colour; this band more clearly defined distally and shading into violet proximally, broader apically, and merging into the ground-colour below vein 2.

Hind wing with a broad white marginal band, its edge clearly but not sharply defined.

Underside as above, but the white markings are more sharply defined, and on the fore wing the white discal scaling extends to the margin.

One ♀. March to May, collected by W. J. C. Frost.

Euploea (*Stictoploea*) *peloroides* sp. nov.

This form is evidently the same as the specimen noted by Fruhstorfer in Seitz, *Macrolep.* IX, p. 249, from Babber, and which he described as *pelor* Doubl. It bears a remarkable resemblance to both *pelor* and *sacerdos*, but is more like the former. As *pelor* is con-

fined to Australia, it is probable that *peloroides* is allied to this, and is a mimic of *sacerdos*. The more ancestral form is probably *jacobensi* Roeb. from Wetter, as the Timor race of this species approaches *peloroides* in the more proximal position of the two discal spots.

This form is so much like *sacerdos* that it remained unnoticed for a long time amongst a big series of that form.

♂ ♀. Upperside with the pattern of *pelor* Doubl. Fore wing with four subapical spots, the one nearest the costa minute, the second in 7 much larger, the third in 6 very large (4 mm. long and 2.5 mm. broad), the fourth in 5 smaller than the second, a fifth spot in 4 below the fourth not larger than the first spot. A discal spot in 3 about 6 mm. long, and another smaller one below it in 2. Three small bluish-white costal spots, in the ♀, a fourth spot in 5. Hind wing with a postdiscal band of spots as in *pelor*. An antemarginal series of dots which are only faintly marked.

Underside of fore wing with subapical and discal white spots as above. A postcellular series of six small bluish-white spots, a bluish-white costal spot and one in the lower end of cell. An antemarginal series of white dots more strongly marked than in *pelor*. Hind wing with postdiscal band as above. A postdiscal series of seven small bluish-white spots, a second small bluish-white spot in 7 placed nearer the margin, and one in the lower end of cell. A series of antemarginal dots as on the fore wing.

Ground-colour of both wings very much as in *timora* and *sacerdos*, fore wing blackish in proximal half.

Length of fore wing: ♂ 34 mm., ♀ 36 mm.

Habitat.—Tenimber Island, South Yamdena, 20 miles north of Saumlakki, November to March, 1917 to 1918, W. J. C. Frost, one ♂ (type); June, July, September, 1918, two ♀ ♀.

EXPLANATION OF PLATES I—IV.

PLATE I.

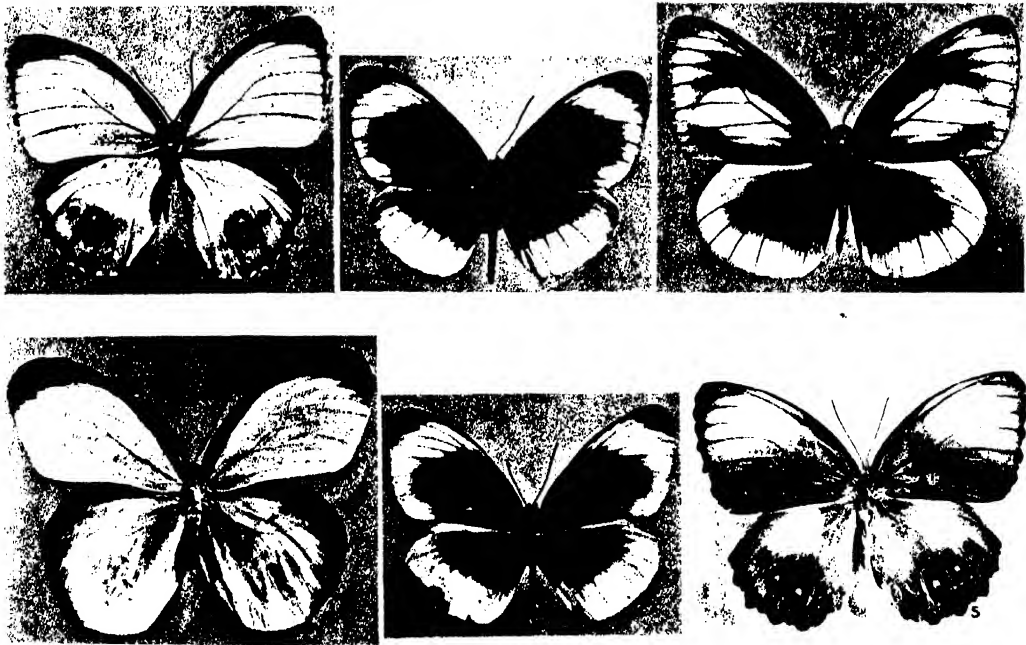
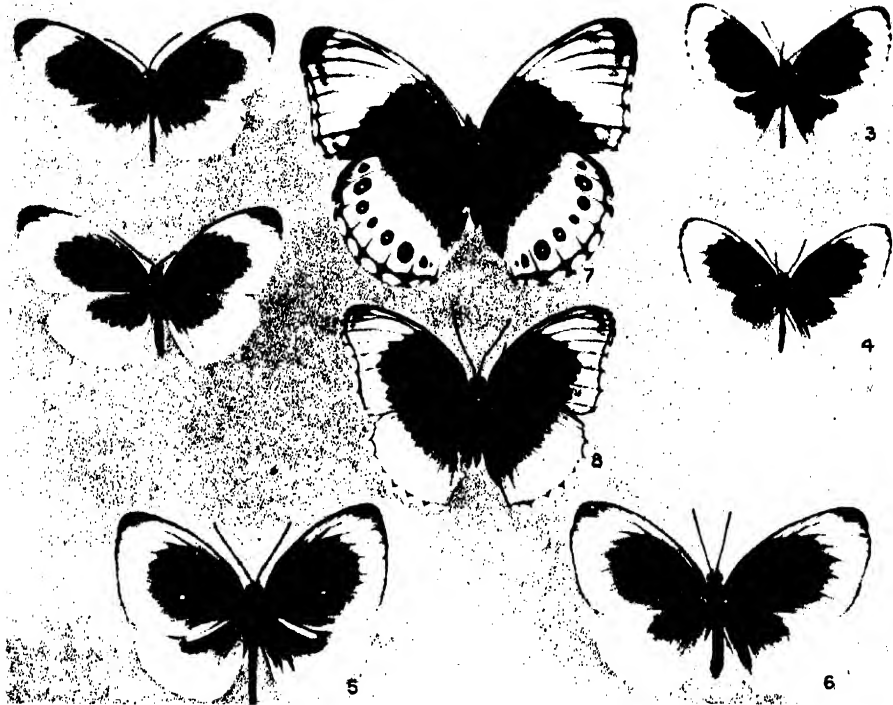
A.—KEY ISLANDS GROUP.

- Fig. 1. *Euploea climena eurypon* Hew. ♂.
2. " " " ♀
3. " *hopfferi*. Feld. ♂.
4. " " " ♀.
5. " *assimilata* Feld. ♂.
6. " " " ♀.
7. *Hypolimnas deois hewitsoni* Wall. ♀.
8. " *alimena heteromorpha* Rob. ♀.

B.—ARU ISLANDS GROUP.

- Fig. 1. *Euploea climena vicina* Feld. ♂.
2. " " " ♀.
3. " *confusa grayi* ♀ f. *mimetica* nov.
4. *Elymnias agondas aruna* Fruh. ♀.
5. " " " ♀.
6. *Taenaris catops* Westw. ♂.

A.



MIMETIC GROUPS IN THE KEY AND ARU IS.

PLATE II.

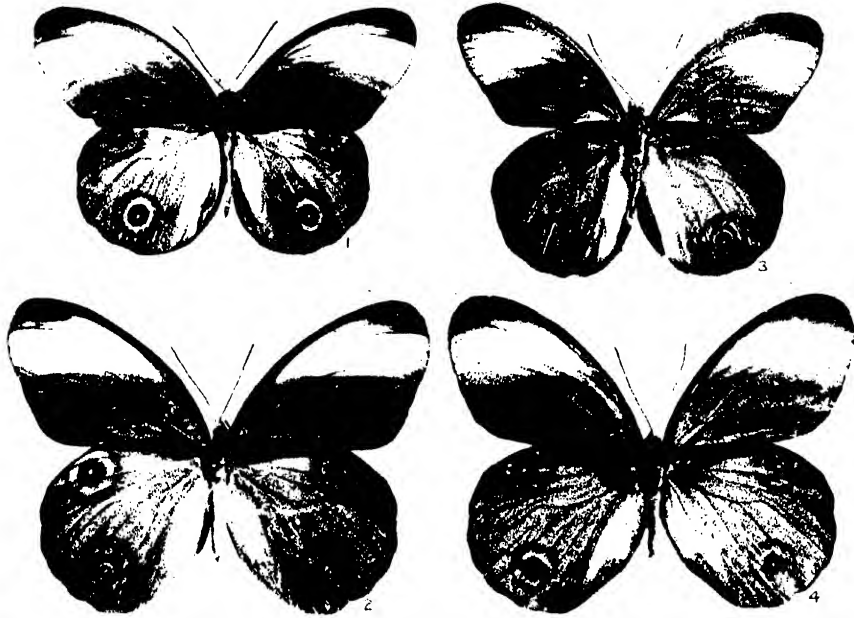
A.—ARU ISLANDS TAENARIS.

- Fig. 1. *Taenaris artemis myopina* Fruh. ♂ .
2. " " " ♀ .
3. " *myops* Voll. ♂ .
4. " " ♀ .

B.—TENIMBER ISLANDS GROUP.

- Fig. 1. *Euploea cleutho sacerdos* Butl. ♂ .
2. " " " ♀ .
3. " *compta* Rob. ♂ .
4. " " ♀ .
5. " *visenda* Butl. ♂ .
6. " " ♀ .
7. *Hypolimnas alimena forbesi* Butl. ♀ .
8. *Euploea peloroides* sp. nov. ♂ .
9. " " " ♀ .

A.



B.

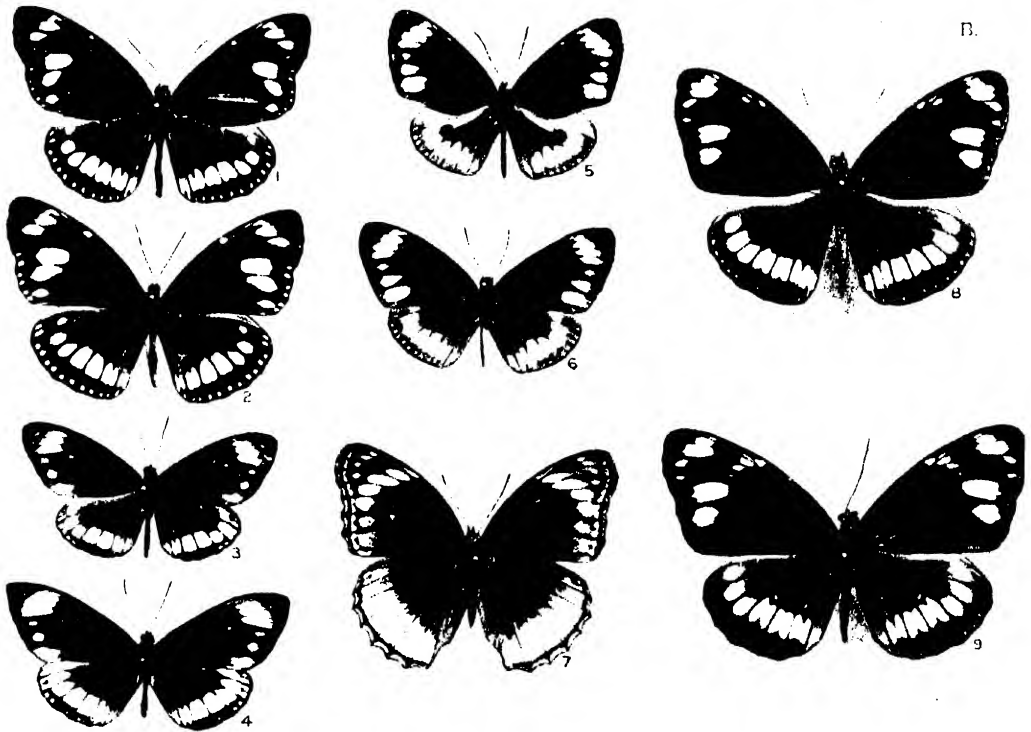


PLATE III.

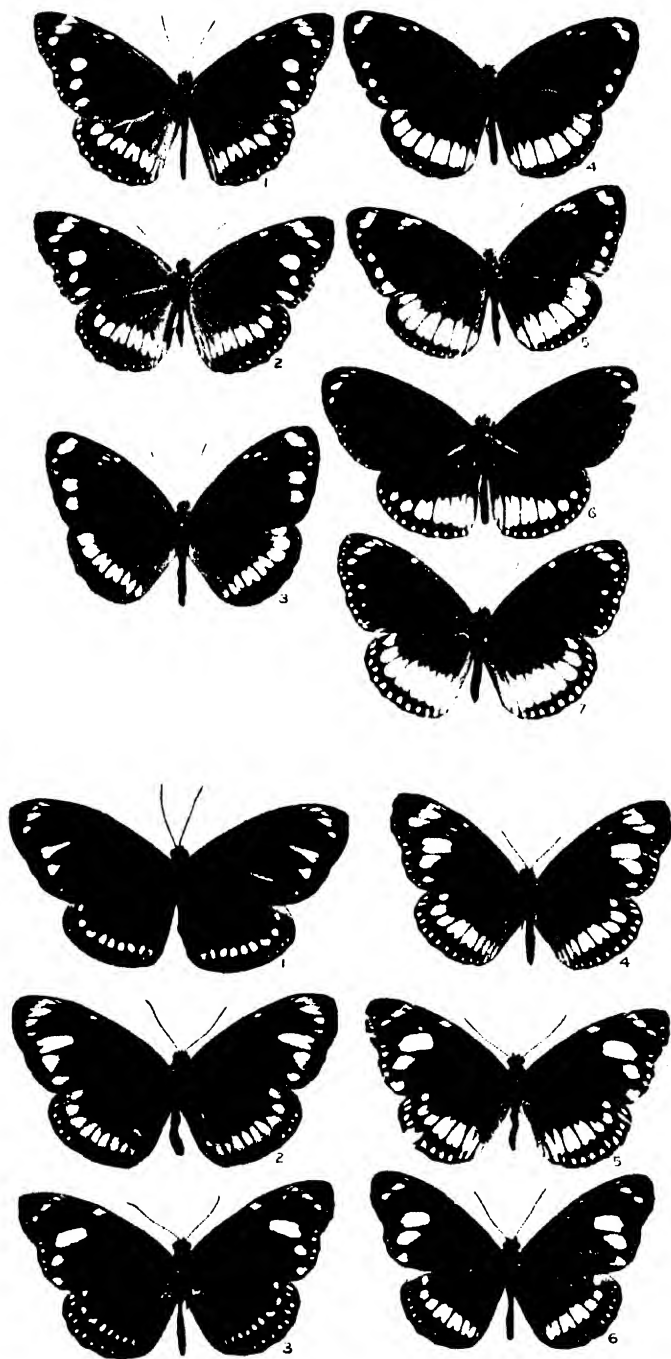
A.—AUSTRALIAN GROUP.

- Fig. 1. *Euploea corinna* McLeay ♂.
2. " " ♀.
3. " *sylvester pelor* Doubl. ♂.
4. " " *sylvester* Fbr. ♂.
5. " " " ♀.
6. " *cichorni* Stgr. ♂.
7. " " ♀.

B.—FIJI GROUP, etc.

- Fig. 1. *Euploea proserpina* Butl. ♂.
2. " " ♀.
3. " *helcita eschscholtzi* Feld. ♂.
4. " *eleutho sacerdos* Butl. ♀. Letti Is.
5. " *helcita walkeri* Druce ♀. Tonga Is.
6. " *eleutho eleutho* Q. & G. Marianne Is.

A.



EUPLOEINES FORMING MIMETIC GROUPS
IN AUSTRALIA AND FIJI.

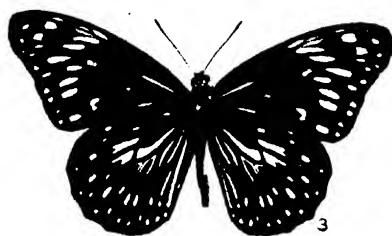
PLATE IV.

A.—CETHOSIA AND DANAIS.

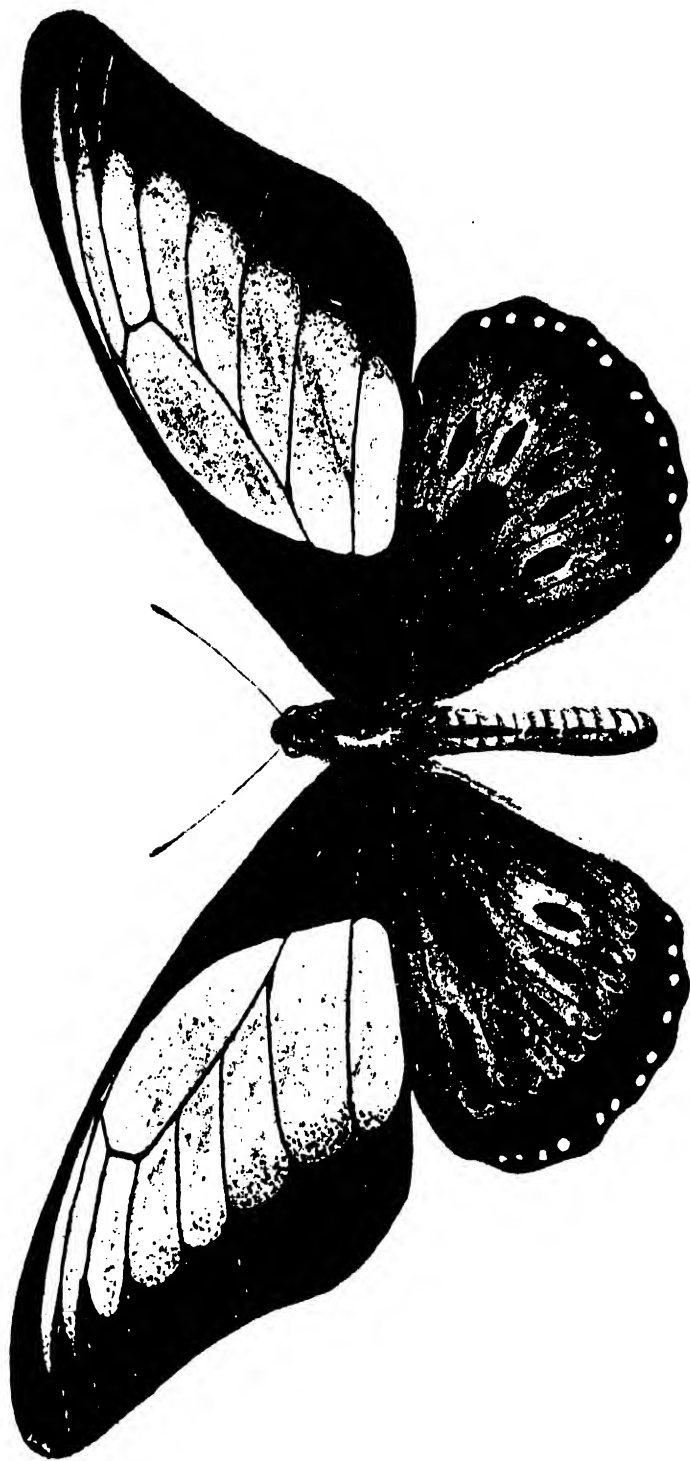
- Fig. 1. *Cethosia cydippe insulata* Butl. ♂ .
2. *Danais plexippus kyllene* Fruh. ♂ .
3. *Danais neptunia* Feld. ♂ .

B.—FORMS OF E. HELCITA.

- Fig. 1. *E. helcita walkeri* Druce ♂ . Tonga Is.
2. " " " ♂ . Tahiti.
3. " *intermedia* f. *indistincta* Moore ♂ . Cook Is.
4. " " f. *unicolor* Druce ♂ . Cook Is.
5. " *lilybaea* Fruh. ♂ . N. Hebrides.
6. " *helcita* Bdv. ♂ . N. Caledonia.



MIMETIC FORMS OF CETHOSIA AND DANAIIS AND FORMS OF
EUPLOEA HELCITA



USIVE PAPILIO."
drawing by T. A. Barn

'AN ELUSIVE PAPILIO.'

This photograph is from a coloured drawing made by Mr. T. A. Barns from memory. It represents a species of *Papilio* of which two specimens were seen by Mr. Barns in the district of the Upper Congo. A similar species, but probably identical, has been reported from Liberia.

No specimen has been obtained of this insect, and it must be exceedingly rare. We reproduce Mr. Barns' drawing in the hope that entomologists in Africa will look out for the insect. We should be glad of any reports from anyone who has seen it.

The band on the fore wing is of a brighter blue than in *zalmoxis*, and the coloration of the hind wing is similar to that of *antimachus*.

IV.—NEW LEPIDOPTERA COLLECTED BY MR. T. A. BARNES, IN EAST CENTRAL AFRICA.

I.—INTRODUCTION.

By G. TALBOT.

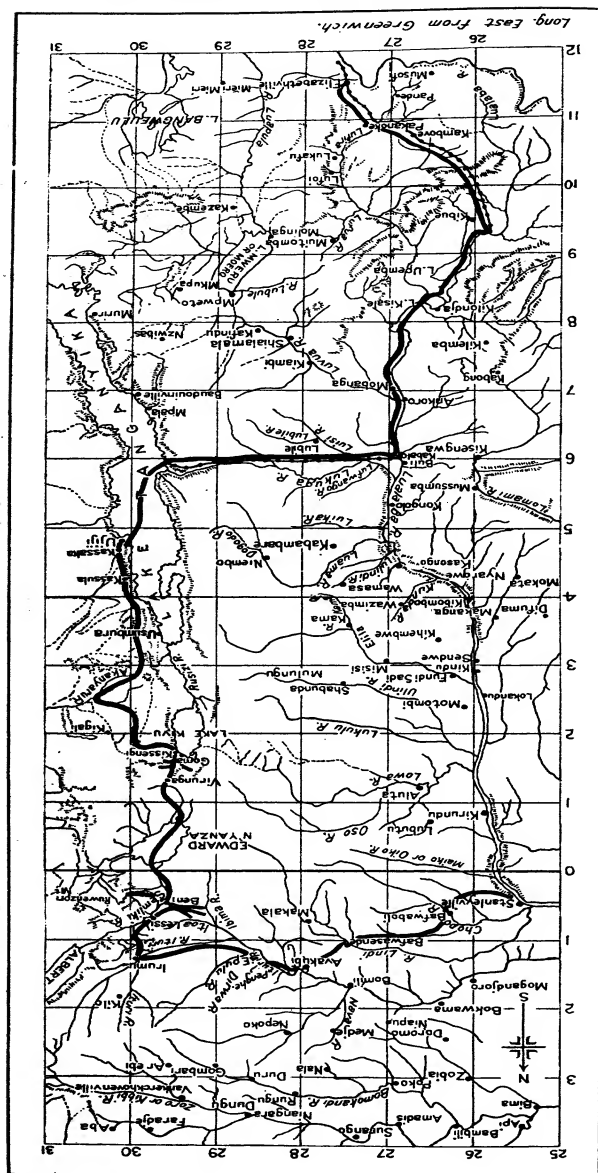
Early in 1919, Mr. Joicey arranged with Mr. T. A. Barnes, already well-known in Africa as a great sportsman and ardent collector of insects, to undertake a collecting trip through a little-known part of the African Continent. Mr. Barnes had sent us already many fine species, and we looked forward with every confidence to a great many more interesting additions. As the following papers will show, the results were as anticipated.

Mr. Barnes, accompanied by his wife, who shared with him all the dangers and discomforts of the expedition, left Likasi, in the S. E. Belgian Congo, on June 3, 1919. During the preceding two months collecting had been carried on in the Lufira Valley near Likasi; some of the species proved to be new, and are described in the following pages.

Mr. and Mrs. Barnes arrived at Albertville on Lake Tanganyika at the end of June, and crossed the lake to Kigoma. They proceeded thence by rail to Gottorp. This place was left on July 14, and proceeding via Kassulu, Kihofi, and the Malagarassi Valley, Kitega was reached on August 4. The Urindi and Ruanda districts were not found to be rich, and it was decided to push on to the north end of Lake Kivu. This was done and Kissenyyies reached on September 7, by way of Ruwuwu, Akanjaru, and Njavarongo Valleys, past Lake Tshohoa, Issawi Mission, and Niansa, the residence of the King of Ruanda.

From Lake Tshohoa no interesting country is passed until Lake Kivu is approached. They came out on to the lake half-way down its length on the east side, and struck north, keeping a few miles away from the shore.

The rains broke during the stay at Niansa and continued, with only a three weeks' cessation, during the rest of the journey.



Three excursions were made from Kissenyies: (1) To the Niragongo Volcano, 11,254 feet, the ascent of which was made; (2) to the Karissimbi, Mikeno, and Vissoke Volcanos, which were ascended to 10,000 feet; (3) to the Bugoye Lava Plains. Insect life is not very abundant in this volcanic region, and no mosquitoes nor white ants are to be found.

On October 27, a move was made to Rutshuru in the Belgian Congo, which was reached on November 3. The small patches of forest in this neighbourhood were very rich in Lepidoptera.

The country west of Lake Edward was in an unsettled state and therefore a barge was hired to take the expedition up the lake to Kasindi. Rutshuru was left on November 10, and proceeding over the Rutshuru and Ruindi Plains, to the south-west corner of Lake Edward, the barge was met near the estuary of the Ruindi River.

Kasindi was reached on December 3, and after a few days a trail was taken through the plains to the west of the Semliki River. Beni was reached on December 14.

Beni was left on the 17th, and the ascent of Ruwenzori commenced by way of the Butahu Ravine. December 24 and 25 were spent under the snow-caps at 13,000 feet. Several very interesting species were collected on this trip. Beni was reached again on the 31st. Leaving this place on January 3, the Semliki Forest was entered and a north-westerly direction taken. A camp was made on one of the sources of the Ibima River and four weeks spent in collecting in the forest around. At this camp Mr. Barns was unfortunate in losing his personal attendant, who died of sleeping sickness, and one of the porters succumbed to a kind of Spanish influenza. A complete change of the personnel of the "safari" had to be made, and then the march was resumed to the north on February 10.

The west side of the Semliki Valley was followed and the escarpment mounted two days beyond Lesse.

Mr. Barns left the main camp south of Boga, and made an excursion of four days into the broken country to the west, drained by the small streams running into the Lenda River. Few if any white men have penetrated this region. Leaving this district they pushed on to Irumu on the Ituri River, reaching that place on February 19.

Irumu was left on March 9, the Ituri River crossed, and the valley followed to Avakubi by way of the new Belgian Post of Penghe.

Leaving the Ituri River at Avakubi, they crossed the watershed

to the Lindi River and thence travelled by way of the Tshopo and North Maiko Valleys to Stanleyville. Since leaving the Semliki Valley 500 miles had been covered on foot.

The actual mileage covered on this expedition was 3,515, including 1,655 miles on foot.

The number of specimens collected was 4,300 and of these 78 butterflies 18 Noctuidae, 23 Geometridae, and 16 other moths are described as new. The remainder of the moths is not yet fully worked out.

The collection also contained 685 other species of butterflies and over 200 other species of moths.

A complete catalogue will be published in another number of this Journal.

A list of the localities mentioned in the following papers, together with their approximate positions, is given below. They are arranged in the order of the route followed. A map to illustrate the route taken has been prepared by us and is included with this paper.

LIST OF LOCALITIES.

	Lat.	Long.
Lufira Valley, S.E. Congo	9° 20 S.	27° E.
Kikura River, Lufira Valley, S.E. Congo	—	—
Panda River, Lufira Valley	—	—
Kassula, Malola River, Rutschugi Valley, Udjiji District	4° 35 S.	30° 9 E.
Albertville, Lake Tanganyika	5° 57 S.	29° 12 E.
Mugowosi River, Malagarassi Valley, Udjiji District	4° 25 S.	30° 13 E.
Nkoma Mountains, S. Urindi District, E. Tanganyika	3° 46 S.	30° 14 E.
Kassaka River, Malagarassi Valley, E. Tan- ganyika	4° 56 S.	30° 19 E.
Lumpungu River, Malagarassi Valley, Urindi District	—	—
Upper Ruvubu (Ruwuwu) River, Urindi District between 3° 19 and 3° 23 S.	3° 23 S.	30° 6 E.
Niansa, Ruanda	2° 21 S.	29° 46 E.
Akanjaru River, Ruanda District	—	—
Lake Tshohoa, Ruanda District	2° 20 S.	29° 44 E.
Kisaba Forest, E. Lake Kivu, Ruanda District	—	—

	Lat.	Long.
Kissenji, Lake Kivu	1° 42 S.	29° 45 E.
Kissenji River, Lake Kivu	—	—
Niragongo Volcano, Lake Kivu	1° 31 S.	29° 45 E.
Karissimbi, Kivu	1° 30 S.	29° 57 E.
Mikeno Mountains, Kivu	1° 27 S.	29° 55 E.
Vissoke Volcano, Mikeno Mountains, Kivu	—	—
Kabati, Lake Kivu	—	—
Rutshuri River, N. Kivu	—	—
Rutschuru	1° 9 S.	29° 56 E.
Tallia River, Semliki Valley	—	—
Ruhindi Plains, south end Lake Edward	0° 21 S.	29° 8 E.
Semliki Forest, E. Semliki Valley, Ruwenzori	—	—
Lower Batahu River, Semliki Valley	—	—
East side Semliki River, Ruwenzori	—	—
Upper Batahu River, Ruwenzori, 1,000 to 2,300 metres	—	—
Ruwenzori, western slopes, 2,200 to 4,000 metres	0° 16 N.	29° 44 to 29° 50 E.
Beni	0° 26 N.	29° 34 E.
Ituri Forest, two days north-west of Beni	—	—
Ituri Forest, N.W. Beni	—	—
Ibima River, Ituri Forest	0° 34 N.	29° 8 E.
Itoa River, Ituri Forest	0° 36 N.	29° 18 E.
Lesse, Ituri Forest, Semliki River	0° 42 N.	29° 44 E.
Cartouche Village, near Lesse, west bank of Semliki	—	—
Irumu	1° 28 N.	29° 52 E.
Loya Valley, twenty miles south of Irumu	—	—
Near Loya Valley, fifteen miles south of Irumu	—	—
Ituri Forest, north-eastern outskirts, three days south of Irumu	—	—
Ituri River, two days west of Irumu	—	—
Ituri River, four days west of Irumu	—	—
Ituri River, three days west of Irumu	—	—
Ituri River, south side, five days west of Irumu	—	—
Avakubi, Ituri River	1° 20 N.	27° 36 E.
South-west of Avakubi, between Ituri and Lindi Rivers	—	—
Penghe, north bank of Ituri River	1° 20 N.	28° 10 E.

	Lat.	Long.
Ituri River, north bank, halfway between Avakubi and Penghe	—	—
East Epulu River, north Ituri Valley, between Penghe and Irumu	—	—
North Ituri Valley, between Epulu and Duye River	—	—
Bafwasende, Lindi River	1° 4 N.	27° 10 E.
Batama	1° N.	27° 2 E.
Tshopo Valley, near Batama	—	—
North of Batama, between Lindi and Lubila Rivers	—	—
Bafwaboli, 'Tshopo River	0° 36 N.	26° 12 E.
Maiko Valley, north side, near Stanleyville	—	—
Stanleyville	0° 30 N.	25° 15 E.
Lisala, Congo River	2° 8 N.	21° 34 E.
Congo River, below Lisala	—	—
Kabala, Upper Congo	—	—
Kinchasa, Congo River, near Brazzaville	—	—
Brazzaville	4° 25 S.	15° 22 E.
Kasama River	—	—
N. Rhodesia, Chambezi Valley, Karunga River	11° S.	21° 30 E.

2.—NEW FORMS OF RHOPALOCERA.

BY J. J. JOICEY AND G. TALBOT.

PIERIDAE.

1. *Mylothris interposita* sp. nov. (pl. IX, fig. 1).

This resembles *flaviana* Gr.-Sm., but the colour is sulphur-yellow, as in *sulphurea* Auriv., and the apical black of the fore wing is of less extent than in *flaviana*, but as in *sulphurea*. It further resembles this form in the spot at vein 3 on the fore wing being free. The spots in the hind wing are as in *flaviana*.

Habitat.—Bafwasende, April, 1920, one ♂.

We have called this a species for convenience. When the *Mylothris* are better known, such forms as *ochracea* Auriv., *flaviana* Gr.-Sm., *sulphurea* Auriv., *citrina* Auriv., *primulina* Butl., and *dimidiata* Auriv., will probably be found to be all forms of one species.

2. *Mylothris latimargo* sp. nov. (pl. IX, fig. 2, ♂, 3 ♀).

Allied to *yulei* Butl., and distinguished from this by the narrow apical border on the fore wing, and the reduced yellow basal colouring.

♂. Upperside as in *yulei* Butl. Apical black narrower, base slightly tinged with yellow. Underside of fore wing has less basal yellow than in *yulei*. Apical area washed with pale buff. Hind wing pale buff.

♀. Upperside of fore wing with more creamy-white than in *yulei* ♀ but similar markings; the edge of the apical patch is not sharply defined, and is marked with pale yellow stripes between the veins; basal yellow paler. Hind wing with a yellowish tinge.

Underside as in the ♂, basal yellow extended.

Length of fore wing: ♂ 27 mm., ♀ 28 mm.

Habitat.—Kavirondo, E. Africa, August, 1901. A. H. Neumann, one ♂ (type); Kikura River, Lufira Valley, S.E. Congo. T. A. Barns, one ♀ (allotype); Lumpungu River, Malagarassi Valley, Urindi District, July, 1919. T. A. Barns, one ♂.

The specimen from the Urindi District is a little different, but may represent a dry-season form. The wings are white on both sides, the apical black is as in some specimens of *yulei*, a little broader than the type and reaching vein 5. The marginal dots of the hind wing are obsolete.

3. *Mylothris ruandana*, Strand. ♀ (pl. IX, fig. 4).

Upperside with broader dark margin to fore wing, the basal half of cell scaled with brown. The hind wing of a deeper yellow than in the male. Underside as in the ♂, but fore wing with basal half of cell orange-yellow.

One specimen, also one ♂ from Lava Plains, Karissimbi, Kivu, October.

4. *Pieris solilucis* Butl. f. *sabulosa* ♀ forma nov.

Distinguished from other females of this species by its yellow-sandy colour. The apical area of fore wing is broadly black-brown, reaching below vein 3; there is a marginal spot on vein 2 and a smaller one on the submedian. The hind wing has marginal dots on veins 1b, 2, and 3, and an indication of one on vein 4.

Underside not differing in colour from upperside.

Habitat.—Cartouche Village, near Lesse, W. bank of Semliki.

January, 1920, one ♀ (holotype); Lesse, Ituri Forest, Semliki River, February, 1920, one ♀.

The second specimen is smaller, with a straighter outer margin to the fore wing, and somewhat resembles forms of the *Pinacopteryx* group.

5. *Pinacopteryx vidua* ♀, f. *primulina* f. nov.

We assign this form to *vidua* Butl., because it was taken at the same place as the ♂ of that form, and no other form was found in the district.

Upperside primrose-yellow. Fore wing with a faint reddish basal suffusion in one specimen, but well-marked in the other. A faint distal dot in three. A marginal row of blackish dots on the veins, and apex narrowly blackish. Hind wing with faint reddish suffusion in one specimen, and dots at end of veins—these absent in the other specimen.

Underside of fore wing darker at the apex, and with a red basal patch. A small spot in three as above, but no marginal dots. Hind wing darker than above. A curved row of faint blackish dots in 2-6, placed between the cell and the margin.

Length of fore wing: 20 mm.

Habitat.—Lake Tshohoa, Ruanda District, August, 1919, one ♀ (holotype); Akanjaru River, Ruanda District, August, 1919, one ♀. T. A. Barns.

DANAIDAE.

6. *Amauris egialea similis* subsp. nov. (pl. IX, fig. 5).

This form presents a strong likeness to *albimaculata* Butl., but has the characters of the *egialea* group, easily distinguished by the longer and broader band.

♂ ♀. Upperside with fore wing markings as in *egialea* Crm. The white spots are smaller, the two placed beyond the cell being shorter and more quadrate. Hind wing with pale-brown band not extending beyond apex of cell, extending slightly into celules 2, 4, 5, 6, forming a costal spot above vein 7, not reaching base of wing, and extended to inner margin. This band is not well-defined distally, in which this agrees with other forms of this group. A submarginal series of three to five brown or whitish spots, which are placed nearer to the margin than in the *echeria* forms.

Underside similar to the upper. Fore wing with dark brown apical area. Hind wing dark brown.

Abdomen with grey ventral surface as in other *egialea* forms.

Described from five ♂♂ and 2 ♀♀.—Rutschuri River, N. Kivu. October, T. A. Barns, one ♂ (type); Semliki, two ♂♂; Entebbe, one ♀; Butindi, E. Africa, August, one ♂, one ♀ (♀ allotype); N. Slopes Kilimanjaro, June 14, 1905, one ♂.

ACRAEIDAE.

7. *Planema macaria hemileuca* Jordan. ♀. (pl. X, figs. 12, ♂, 13, ♀).

The ♀ is distinguished from *macarista* by the narrow black distal area on the hind wing below, the inner edge of the white band being placed more proximal as in *macaria*.

We may remark here that in all *Planema* we have examined, the claws of the ♂ are unequal, and of the ♀ equal.

♀. Similar to *macarista* and *macaria*. Fore wing with the band as broad as in *macarista*, both edges straight from costa to vein 4, but from here to the outer margin the outer edge is strongly dentate; a constriction at the submedian fold. Hind wing with band placed as in *macaria*.

Underside with the bands as above, but with the apical area of fore wing and distal area of hind wing brown as in *macarista*. The band of the hind wing is sharply defined along both edges.

Habitat.—Ituri Forest, north-eastern outskirts, three days south of Irumu. February, 1920, T. A. Barns, one ♂; N. bank, Ituri River, halfway between Avakubi and Penghe, May, 1920, T. A. Barns, one ♀ (neallotype).

8. *Acraea eltringhami* sp. nov. (pl. X, fig. 11).

We take the liberty of naming this interesting species after Dr. H. Eltringham, who has so much advanced our knowledge of this group.

Allied to *insignis* Dist., but easily distinguished by the strongly dentate black marginal border of the hind wing. The claws are unequal as in *insignis*.

♂. Upperside of fore wing with the red basal area not reaching end of cell and only extending slightly into the base of cellule 2. Hind wing with black basal area as in *insignis*, but with clean-cut edges, and no spots within. A black distal patch as in *insignis*, almost touching the basal area at vein 3. The black marginal border is strongly dentate.

Underside of fore wing as above. Hind wing with black area as above, thinly scaled with white proximally, pink distally. A dentate marginal border as above, and submarginal red border.

Abdomen black, with two thin ochreous subventral lines.

Length of fore wing : 24 mm.

Habitat.—Kisaba Forest, E. Lake Kivu, Ruanda District. September, 1919, T. A. Barns, 1 ♂.

9. *Acraea bettiana* sp. nov. (pl. IX, figs. 6, 7 ♂, 8 ♀.)

This species, quite distinct from any known, belongs to the *goetzi* group. We dedicate it to Mrs. T. A. Barns.

♂. Upperside of fore wing with black-brown ground-colour. A creamy-white median area of triangular shape, extending from the inner margin to slightly beyond vein 3. The part of this patch lying in cellules 1b and 1c represents the widest part of the area. The patch does not reach the base, its proximal edge lies along the cell, and its distal edge is oblique to the outer margin and is nearly straight. The patch is traversed by the dark veins. A narrow subapical band of the same colour as the central area, lying between veins 4 and 10. A similarly coloured spot in the centre of the cell, more or less rounded but inclined to be pointed basad. A series of short brick-red marginal stripes in 2 to 7, which scarcely touch the margin; a rounded brick-red marginal spot on the fold 1b to 1c.

Hind wing with black-brown ground-colour. The distal area traversed by a creamy-white band from vein 8 to the inner margin. The lower half of this band is of even width and but slightly indented to vein 3, but in cellules 3 to 5 it is produced distally, more so in 4 and 5, and ends narrowly in 6 and 7. This band reaches the cell end but does not fill in the bases of cellules 2 and 5. A marginal series of brick-red triangular spots which are slightly creamy-coloured at their edges; these spots lie in cellules 1c, 2 to 7.

Underside of fore wing as above. The marginal stripes are greatly extended and they reach the pale area and the subapical band. There is some brick-red scaling at the base. Hind wing with a creamy-white band as above, but edged proximally by a thick black line, and also a creamy-white basal band edged distally by a thick black line. The basal band consists of an elongated patch on the inner margin, a narrow stripe in 1b, a spot in 1c, and a large patch in the cell and 7; it bears a rounded black spot in the cell, and there is also a black spot dividing the area in 1a. The basal part of area 1c is black, and above this the

band is edged with black, leaving the base of costa and part of area 9 brick-red. The two bands meet on the inner margin, and the space between them is brick-red traversed by the veins here thickly scaled with black. The submarginal area is brick-red, and traversed along the veins by somewhat ovate and pointed stripes which extend from the outer edge of the band to the margin; these stripes bear each two creamy lines within the margin. The distal margin is edged with ochreous, forming spots between the stripes in 1c, 2 to 7.

Head, thorax and antennae black; palpi ochreous, collar with two reddish tufts. Abdomen black, ventral surface buff, two ventro-lateral buff stripes, and a row of lateral creamy spots. Legs with trochanter and base of femur black, remainder ochreous.

♀ similar to the male. Fore wing with reduced creamy-white markings, and wider band on the hind wing. Taken separately the latter character is not distinctive. On the underside of the hind wing the space between the two bands is narrower than in the male and bears three smaller and more widely separated brick-red spots.

10. *A. bettiana* aberr. *Kissejensis* ab. nov.

One male specimen departs from the type in possessing on the fore wing a black spot in the pale area, placed proximally just above the submedian. On the hind wing the discal band is extended to near the base, the extension being marked here and there with black scaling, and there remains also the black edge of the band at the cell end, and a blackish quadrate costal spot.

As this interesting aberration suggests a mimetic approach to the *cabira* type of *Acraea* we thought a name should be given it.

Length of fore wing: ♂ ♀ 21 mm.

Habitat.—Kisaba Forest, Lake Kivu, September (Type ♂ and four others); Lava Plains, Karissimbi, Kivu, October (Type ♀) Kisseji River, Lake Kivu, September (f. *Kissejensis*.)

Described from a series of six ♂ ♂ one ♀.

11. *Acraea disjuncta* forma *alcipoides* form. nov. (pl. IX, fig. 10).

This form of *disjuncta* Gr.—Sm. presents a startling likeness to *alciope* Hew., and occurs in the Ituri District. No typical specimens were taken here.

♂. Upperside of both wings pale ochreous. Fore wing with black-brown apical area and narrow distal margin. The distal edge

of ochreous area is straight and oblique from close to costa to vein 5, it projects in cellule 4 and is thence slightly crenulate to the inner margin. The costa, from near base of vein 11, is black-brown to the base, also the discocellulars and a portion of upper part of cell to base, extending to the submedian. The proximal edge of the ochreous area is parallel to the distal edge between veins 12 and 4, from the origin of 4 it is outwardly curved in the cell and downwards to the inner margin between origin of 2 and the base. Hind wing with some black-brown dusting at the base, and a black-brown distal margin 3 mm. broad. The veins and intraneural folds are more heavily scaled with black-brown on the distal margin, and these streaks extend shortly into the ochreous area.

Underside paler than the upper. Fore wing with veins and intraneural streaks in the apical and distal marginal areas. Hind wing with eleven black basal spots, one in nine, one in upper part of cell, two in lower part, one at base of 1c, two beyond it in line, one in 1b, lying between the outer two above, a dot beyond it and below the one above, a spot in 1a below the second one in c, a dot beyond it below the middle one in b. Veins 1a—8 pale brown, and heavy intraneural stripes from near cell to the margin.

Length of fore wing 24 mm.

Described from two specimens from West Semliki River, near Lesse, January, 1920, one ♂. Ituri Forest, N.W. Beni, January, 1920, one ♂. Both collected by T. A. Barns. The following specimens, captured by Dr. S. A. Neave, are in the British Museum. Unyoro, Bugomia Forest, 2—4, xii. 3,700 feet, two ♂♂; Toro, Daro or Durro Forest, 4,000—4,500 feet, October, 1911, four ♂♂. All taken in cool and dense forest.

12. *Acraea leucopyga latiapicalis* subsp. nov. (pl. IX, fig. 9).

This represents most probably the Congo race of the species hitherto known from Rhodesia, Tanganyika Territory, and Uganda.

♂. Differs from typical *leucopyga* Auriv. in the broader black and straight-edged apical area on the fore wing. There is no discal spot in cellule 5 of the hind wing.

The similar-looking *intermedia* Wichgr. is at once distinguished from it by the heavier spotting and the outer submedian spot on the fore wing lying below the one in cellule 2.

Habitat.—Kabala, Upper Congo. June, 1919, one ♂.

NYMPHALIDAE.

The genus *Ergolis* Westw.

The species *enotrea* Cram., is associated with a form which closely resembles it but differs especially in the possession of patches of modified scales on the wings below in the ♂.

The species *actisanes* Hew., which possesses in the ♂ a large area on the hind wing covered by modified scales, is associated with a form in which this area is absent.

We have examined the genitalia of the four forms and find two well marked types indicating a great distinction between *enotrea* and *actisanes*, but less distinction between either and the form resembling it in pattern.

One may perhaps consider the probability of the existence of a dimorphic form in connection with both these species, and that a certain dependence of this form on the seasons may have led to further divergence in structure.

At present we have no data to support this view, but we think that interesting results would be obtained from breeding experiments.

We think it is not impossible that species may evolve from closely allied forms in the same locality through the agency of seasonal and sexual dimorphism, and changes in the flight-time of the sexes.

Genitalia.—The *Ergolis* examined are characterised by the possession of two highly-chitinized symmetrical plates. These plates are disposed bilaterally on the ventral side of the genital apparatus, and we call them the ventral plates. They are connected with the valves by a membrane bearing setae on one side. We call this the connecting setose membrane. Its position is the same in *actisanes* and *albifascia*, but differs in *enotrea* and *personata*.

The genitalia of *enotrea* and *albifascia* show more resemblance to one another than to either *actisanes* or *personata*, whilst these two latter are similar to one another.

Owing perhaps to a faulty dissection of the insects, a structure represented in the drawing of *enotrea* by a dotted line, and which probably is the chitinous cone at the base of the valves (ring-wall, penis funnel, and juxta of authors), has been missed in the other forms examined. Further investigation will be made in reference to this structure.

13. *Ergolis enotrea suffusa* subsp. nov.

Specimens of *enotrea* Cram., from the E. Congo and Uganda, may be separated from west-coast forms by the more greyish colour of the fore wing, and much reduced white scaling on both wings.

Entebbe, Uganda, August, 1901, A. H. Neumann, two ♂♂ one ♀; Entebbe, one ♂; Uganda, B. S. Gledhill, one ♀; Mabera Forest, Uganda, Jackson, one ♀; Toro, Uganda, January, one ♀; Albertville, Congo Belge, June, 1919, one ♀, one ♂, T. A. Barns (types); Sabaka River, July, one ♂; in B. M. from Uganda and Angola.

The Sabaka specimen has much the coloration of a female on both wings.

Genitalia.—(Plate V, figs. 1, 2).

Valves with the posterior and greater part very slightly chitinized. Connecting setose membrane developed anteriorly from the ventral edge, the surface bearing the setae being on the outside.

Ventral plate seen laterally is triangular.

Scaphium broader than in *albifascia*.

Uncus finger-shaped and nearly straight.

14. *Ergolis albifascia* sp. nov. (pl. X, figs. 14, 15.)

This species is mixed up in collections with *enotrea* Cram., but may be distinguished by the distinct white postdiscal band on the fore wing, and by the enlarged patches of modified scales at the ends of the veins on both wings below.

♂. Upside coloration and markings similar to *enotrea*. Fore-wing with a well-marked grey-white postdiscal band, curved outwards at vein 2 and narrowing anteriorly to vein 7; discal band defined by black edgings, and slightly brownish, outer edge not broken at vein 4, and above this more curved and less oblique than in *enotrea*. Hind wing with the grey-white area limited by vein 6, outer edge sharply defined. No distinct costal spots in 6 and 7. The second pale post-discal line in the distal area is much farther from the first than in *enotrea*, and forms the base of a row of dark brown spots whose rounded inner edges are formed by the first line.

Underside markings as in *enotrea*. The veins are much more heavily striped with blackish-brown modified scales, and these form somewhat ovate patches at the ends of the veins, larger on the hind wing where they almost touch one another. Hind wing with the discal band more constricted in cellule 4 than in *enotrea*, and the

spots of the postdiscal band more separate. The submarginal spots are reduced to narrow triangles, their bases not touching.

♀. Very similar to *enotrea*, but distinguished by the white post-discal band, and well defined discal band on the fore wing; hind wing with broader dark postdiscal band, and white area limited by vein 6.

In the Joicey collection from Addah, W. Africa, ♂ ♀; Accra, one ♂; Coomassie, August to September, 1913, one ♂ one ♀; Sunyani Forest, Coomassie, two ♂ ♂; Cameroons, one ♂; N. Bank, Ituri River, halfway between Avakubi and Penghe, May, 1920, one ♂, T. A. Barns; Ituri Forest, N. W. Beni, January, 1920, one ♂, T. A. Barns; East Epulu Forest, N. Ituri Valley, March, 1920, one ♂, T. A. Barns; Cartouche, near Lesse, W. Semliki River, January, 1920, one ♂, T. A. Barns; North Side Ituri River, three days west of Irumu, March, 1920, one ♀, T. A. Barns; Semliki Valley, Ruwenzori, December, 1919, 1 ♂ (type); North Lindi Valley, west of Bafwasende, April, 1920, one ♀ (allotype), T. A. Barns; Senchi, Volta River, one ♂; in the B. M. also from Uganda.

Genitalia (pl. V, fig. 3).

Valve similar to *enotrea* but bulbous at the posterior extremity. Connecting setose membrane developed apparently from the median inner surface, the surface bearing the setæ being on the inside.

Ventral plate, and uncus as in *enotrea*.

Scaphium developed medianly into a long and sharp pointed process.

15. *Ergolis personata* sp. nov. (pl. X, fig. 16).

It would appear that this peculiar form has been hitherto mistaken for the ♀ of *actisanes* Hew. Recognizable by its brown colour, and the absence of the broad costal patch of modified scales found in the allied species.

♂ ♀. Upperside pale ochreous-brown, markings less strongly defined than in *actisanes*. Outer edge of discal band on fore wing with well-marked teeth on veins 4 and 5. Hind wing with the bands continued to the costa.

Underside paler than in *actisanes*. Fore wing without patch of modified scales and with discal band reaching the submedian. Hind wing with discal band posteriorly closer to the postdiscal band than in *actisanes*.

The females are not easy to distinguish. To *actisanes* we assign those with more clearly defined discal bands marked with reddish-

EXPLANATION OF PLATE V.

Genitalia of Ergolis.

- Fig. 1. *Ergolis enotrea*, ventral view.
2. ,, ,, lateral view.
3. ,, *albifascia*, ventral view.
4. ,, *actisanes*, ventral view.
5. ,, *personata*, ventral view.

VP. = Ventral plate.

SM. — Connecting setose membrane.

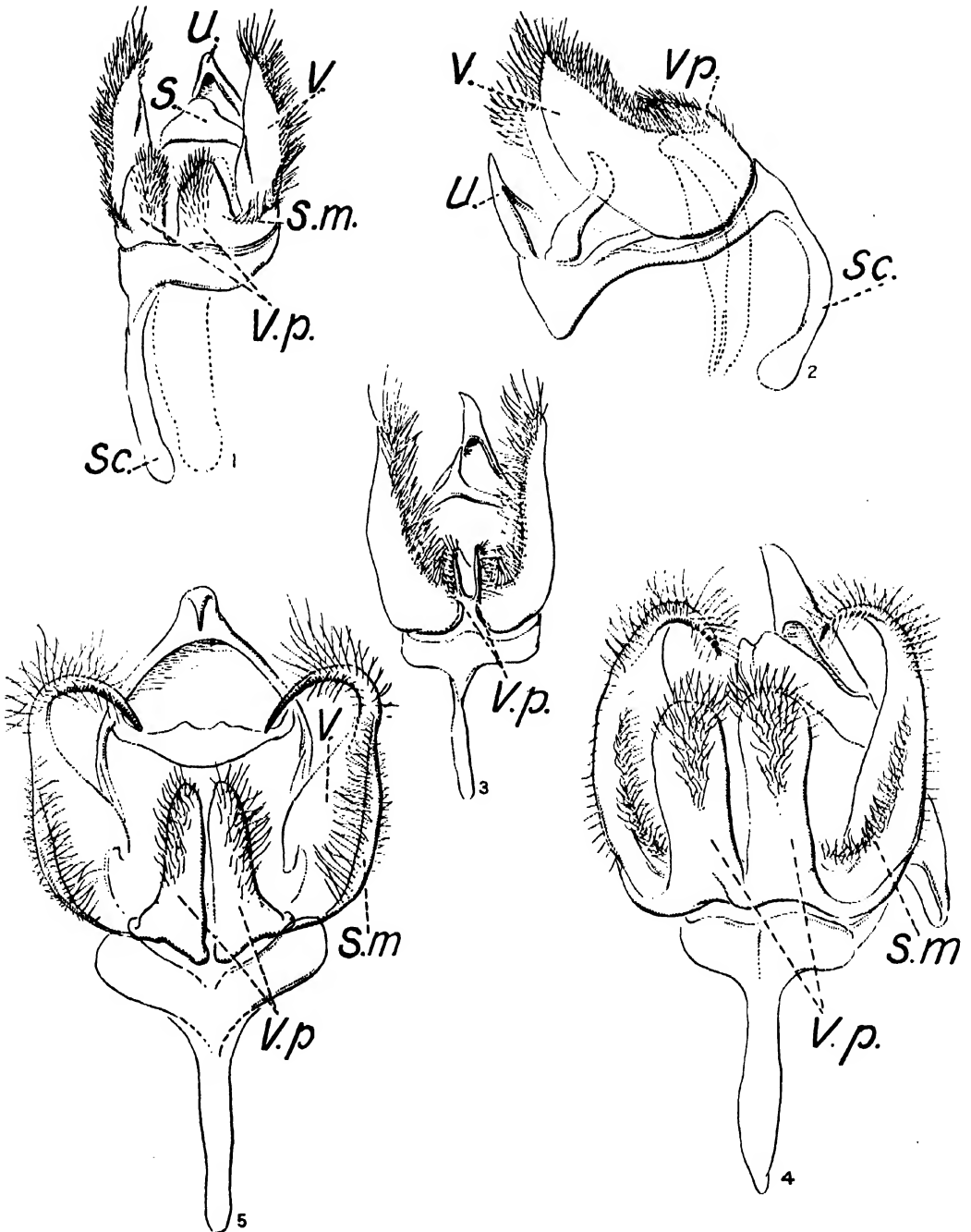
U. = Uncus.

V. = Valve.

S. = Scaphium.

SU. = Saccus.

All structures magnified 30 times, and reduced 1/3ths.



GENITALIA OF AFRICAN ERGOLIS.

brown, discal band on hind wing more even anteriorly, and no spot in 7 of the post-discal band. Females with paler markings, more irregular discal bands, and hind wing with costal spot of the post-discal band present, belong to *personata*. The females of both forms are marked with a white costal spot on fore wings.

Habitat.—Upper Kassai District, P. Landbeck, three ♂♂, one ♀ (types); Ituri River, two days west of Irumu, March, one ♀, T. A. Barns.

E. actisanes Hew., in the Joicey collection from Nigeria, May 21, 1911, one ♂; Calabar, two ♂♂; Cameroons, three ♂♂; Bitje, Ja River, Cameroons, dry season, one ♂, October, one ♂, wet season, one ♂; Gaboon, one ♀; no loc., 2 ♀♀.

Genitalia.

E. actisanes Hew. (pl. V, fig. 4).

Valve elongated for a quarter of its length and produced to a highly-chitinized and pointed hook. About one third of the organ is strongly chitinized, the remainder much less so. Connecting setose membrane developed from the inner median surface of the valve and apparently connected with the non-setose or ventral surface of the ventral plate.

Ventral plate somewhat oblong and large in proportion to the valves.

Uncus strongly flexed ventrally.

Scaphium notched medianly.

E. personata (pl. V, fig. 5).

Valve similar to *actisanes*. Connecting setose membrane developed as in *enotrea*, proceeding from the ventral edge and joined to the basal edge of the ventral plate.

Ventral plate similar to *actisanes*.

Uncus similar to *actisanes* but more hook-like.

Scaphium more strongly notched than in *actisanes*.

16. *Byblia acheloia crameri* Auriv. f. *nigrifusa* forma nov.

This aberration has the yellow markings on the upperside much reduced and suffused with black.

One ♀ specimen was taken by Mr. Barns in an open part of the forest on the Lindi River, near Bafwasende, April, 1920.

17. *Precis archesia* f. *obsoleta* forma nov.

This form is of frequent occurrence, but does not seem to have received a name. It is distinguished by the absence of red-brown markings above. The place of the band on the fore wing is taken by black scaling, and on the hind wing the spots are edged outwardly with some faint red-brown scaling. The undersurface is similar to the wet-season form *staudingeri* Dew.

Habitat.—With the typical form. In the Joicey collection from Kassala, Malalo River, Rutschugi Valley, Udjiji District, July, 1919, one ♂ (type); Kasama River, May, 1917, one ♂, T. A. Barns; Bihe District, Angola, two ♂♂; N.W. Rhodesia, May 17, 1904, H. Cookson, one ♂.

18. *Hypolimnias salmacis* ♀ f. *ochreata* form nov.

We propose the name *ochreata* for the females of this species having pale ochreous coloration instead of white.

H. monteironis Druce.

H. monteironis Druce, Cist. Ent. i, p. 286 (Old Calabar and Angola) (1874).

The genital armature of this form agrees with that of *salmacis*.

19. *Aterica galene* f. *albimacula* forma nov.

This form is distinguished by the spots on the fore wing being white, and the patch of the hind wing also white or partly so.

f. *extensa* Heron.

Trans. Zool. Soc. Lond. xix, p. 153 (Ruwenzori) (1909).

This was described as being a local race, but treated by Aurivillius as an individual aberration (Seitz Macrolep. xiii, p. 191). We agree. This form is in the Joicey collection from the Ruanda and Udjiji Districts, Albertville, Nyasaland and Portuguese Congo. It is transitional to *theopane* Hopff.

20. *Cymothoe theobene* ♀ f. *umbrina* form. nov.

Distinguished by the white areas being dusted over with black-brown. The veins are sometimes scaled with yellow-brown, and one specimen shows a discal patch of yellow-brown on the hind wing.

In the Joicey collection from Sunyani Forest, Coomassie, Ashanti, two ♀♀ (type); Friapere Forest, Coomassie, one ♀; Cameroons,

two ♀ ♀ ; Upper Kasai District, two ♀ ♀ ; Ituri Forest, N.W. Beni, January, 1920, one ♀ (hind wing with yellow-brown) ; Ituri River, four days W. of Irumu, March, 1920, one ♀ . T. A. Barns.

21. *Cymothöe eris* Auriv. ♀ (pl. XI, fig. 18).

The female described by Aurivillius (Seitz, *Macrolep.* xiii, p. 151) does not appear to belong to this species. We have three females which agree with the ♂ ♂ in the characteristic underside markings and in the peculiar falcate shape of the fore wing.

Upperside grey-brown. Fore wing with oblique discal line reaching to vein 5 and bounding 5 or 6 white or grey-white spots, the one in 2 being well-marked, the two nearest costa dusted with grey. A postdiscal band of grey-brown crescents somewhat pointed proximally and edged with grey-white on each side and distally more extended in 1a, 1b, and 2. A submarginal grey-brown zigzag line, marked between the veins with black dashes.

Hind wing with discal white or grey-white band about 5 mm. broad, not entering the cell, reaching to the middle of 1c and to the costa, dusted with grey in 6 and 7, and strongly dentate on its outer edge. Discal line faintly visible. A submarginal zigzag black-brown line marked with black dashes between the veins, and edged proximally with grey-white, leaving a postdiscal strongly dentate line marking the distal edge of the white band.

Underside with pale ochreous basal area and grey-white distal area. The discal line on the hind wing passes close to the origin of veins 3 and 4.

Length of fore wing : 30-34 mm.

This form bears very little resemblance to the ♀ of *capella* Ward, is smaller, and has a markedly falcate fore wing. The more distal position of the discal line on both wings is to be noted. The resemblance to the *cuenis* form *euthalioides* Kirby is more marked, but the reduced white on the fore wing and the position of the discal line always distinguishes it from this.

♀ Neallotype from Bafwaboli, Tshopo River, April, 1920, T. A. Barns. Also one ♀ from Kasai River, and one from Upper Kasai District.

Cymothöe herminia Gr.—Sm. ♂ ♀ .

C. herminia Grose-Smith, *Ann. N.H.* (5) 19, p. 63 (1889) (Cameroons) ♂ .

C. herminia Holland, *Bull. Amer. Mus. N.H.* xliii, p. 196, pl. viii, fig. 4 (1920) ♂ ♀.

C. johnstoni Butl. P.Z.S. 1, p. 47, pl. 1, fig. 4, ♂ (1902) (Toro).

C. weymeri Suffert, *Iris*, 17, p. 119 (1904) (Cameroons) ♂.

After a careful study of sixty specimens in the Joicey collection we are forced to conclude that these three forms belong to one variable species, which we are at present unable to separate even into local races.

A series of these three forms shows much variation, and the same applies to the females. A female in the Joicey collection from the Grose-Smith coll. is labelled "Type" and is from the same locality as the ♂ type. No description of this specimen was ever published. Dr. Holland, *loc. cit.*, has recently described the ♀.

Variation in ♂ :—

The black distal area of the fore wing varies in width and may not reach beyond cellule 5. The brown distal band varies in width and the spots in 3 and 4 are sometimes reduced; it also varies in colour from yellow-brown in typical *herminia* to creamy-white in typical *weymeri*. Similar variation occurs in the pattern of the hind wing.

The underside may be pale ochreous with lighter discal band and basal spots, dark brown with pale distal margin and whitish basal spots, white basal area and white submarginal markings, or entirely dark ochreous-brown, intermediates occurring between these. Most specimens from Uganda have the basal markings but little lighter than the ground-colour (f. *johnstoni*).

Variation in ♀ :—

The white discal band may be almost a line as in the form described, or it may be 3 mm. broad in cellule 2 of the fore wing with larger spots anteriorly, and correspondingly broad on the hind wing. The length of the fore wing may vary from 36 mm. to 42 mm. The distal yellow band varies in width and the black spots in size; the colour varies from yellow-brown to nearly white, and in one specimen the black spots on both wings are edged with white proximally and without any yellow colour at all.

The underside varies from ochreous to grey-brown and grey-white.

The female without yellow markings and with pale underside belongs to the f. *johnstoni* and needs description. The specimen figured by Butl. *loc. cit.* fig. 5, is a form of *lurida* ♀.

22. ♀ f. *johnstoni* Butl. (pl. X, fig. 17).

Upperside black-brown with white discal band, about 3 mm. broad, on both wings. Black sagittate submarginal spots edged proximally with white on the fore wing, and their points tipped with white on the hind wing.

Underside with basal area grey-brown, distal area grey-white with pale-brown markings.

Type in Joicey coll. from Toro, Uganda, February, 1902.

The following specimens are in the Joicey collection:—

f. *herminia*.—Mongo ma-Gobah (Cameroons), ♂ (type, Grose-Smith), one ♂, two ♀♀ (Grose-Smith collection); Cameroons one ♂; Aruwimi, one ♂ one ♀; Semliki, six ♂♂; Toro one ♂; Tshopo Valley, near Batama, Congo Belge, April, 1920, one ♂, T. A. Barns; Bafwaboli, Tshopo River, April, 1920, T. A. Barns, one ♀; between Lindi and Lubila Rivers, N. Batama, April, 1920, T. A. Barns, one ♀; Ituri River, four days' west of Irumu, March, 1920, T. A. Barns, one ♀; between Penghe and Avakubi, N. bank Ituri River, March, 1920, T. A. Barns, one ♀; Ituri Forest, N.W. Beni, January, 1920, T. A. Barns, one ♀.

Intermediate form: both wings without a dark margin and with broader yellow distal area. Cameroons, one ♂; French Congo, three ♂♂; coll. Powell-Cotton (Congo), three ♂♂; Mhonda, one ♂; Ihima River, Ituri Forest, January, 1920, two ♂♂, T. A. Barns; E. Epulu River, N. Ituri Valley, between Penghe and Irumu, March, 1920, one ♂, T. A. Barns; Ituri Forest, two days' north-west of Beni, January, 1920, T. A. Barns, one ♂; Penghe, January, 1920, T. A. Barns, one ♂; Penghe, N. bank Ituri River, March, 1920, T. A. Barns, two ♂♂.

Noted by Barns as feeding on rotting fruit in thick forest.

f. *weymeri*.—Cameroons, one ♂ (type) (ex. coll. Suffert); Sunyani Forest, Coomassie, Ashanti, 1912, one ♂; coll. Powell-Cotton (Congo) three ♂♂; Lesse, Ituri Forest, February, 1920, T. A. Barns, two ♂♂; Cartouche, near Lesse, January, 1920, three ♂♂, T. A. Barns; forest between Epulu and Ituri Rivers, T. A. Barns, one ♂; Penghe, N. bank Ituri River, March, 1920, T. A. Barns, one ♂; N. side Maiko (or Oiko) Valley, near Stanleyville, May, 1920, T. A. Barns, one ♂; Rutshuri River, N. Kivu, November, 1919, T. A. Barns, two ♂♂.

f. *johnstoni*.—The distal edge of the hind wing band is more dentate.

There is a specimen from the Semliki and one from the Cameroons with this character perhaps not so marked.

Uganda, two ♂♂; Toro, one ♂; Toro, February 1902, ♂♀ (♀ neallotype); Rutshuri River, N. Kivu, November, 1919, three ♂♂ three ♀♀, T. A. Barns; Mabera Forest, Uganda, 4,000 feet, August, 1919, R. A. Dummer, one ♀. The Kivu ♀♀ and the Mabera Forest one show a broader white band, and one Kivu specimen has a brownish tinge over the distal dentate band.

Cymothoe reginae-elizabethae Hall (pl. XI, fig. 19).

We take the opportunity of giving a figure of the underside of this species. Several specimens were taken by Mr. Barns in the Ituri Forest.

23. *Euptera semirufa* sp. nov. (pl. XI, fig. 27).

As we cannot associate this female with the male of any described form we venture to give it specific rank. It appears to belong to the *elabontas* group.

♀. Uppside with black-brown ground-colour. Fore wing with reddish-yellow cell-marks outlining a basal oval spot and a central rounded spot. Outside cell a rounded black discocellular spot partly outlined with reddish-yellow. A subbasal reddish-yellow stripe formed of a streak from inner margin to submedian fold, a spot in 1c and a smaller spot in the base of 2. A reddish-yellow submedian patch between inner margin and vein 2, tinged with white anteriorly. An elongate white spot in 2, a smaller one above it in 3, two white streaks in 4 and 5, a small white spot in 6, a thin white streak in 8 near costa, and a white spot below it in 6. A distal series of seven black narrow ovate spots outlined with white. A submarginal white crenulate line, interrupted at the veins.

Hind wing with a reddish-yellow narrow subbasal band, crossing middle of cell from inner margin to vein 6. A broad reddish-yellow band from inner margin to vein 7, extending into end of cell and leaving a narrow outer marginal area of ground-colour. This band narrows anteriorly, and bears near its outer edge a series of rounded black spots of even size; the outer edge of band is strongly crenulate and heavily lined with black, a white spot is placed at the proximal edge of the band in 6.

Underside markings as above and more distinct, the ground-colour and reddish-yellow areas paler. Fore wing with three black cellspots and one below it in 1c; a black discocellular spot invaded by ground-

colour. The white spots and stripes joined to the distal ovate spots. Hind wing with a central costal white spot in 7. Subbasal band and proximal area of distal band tinged with white.

Head, thorax and abdomen, black; antennæ black; palpi grey, paler below, legs black and grey; abdomen rubbed, but apparently grey below with lateral rufous spots. The small tufts on thorax and abdomen as in females of other species, are white as in *elabontas*.

Length of fore wing: 26 mm.

Habitat.—North Ituri Valley, between Epulu and Duye Rivers, March, 1920, T. A. Barns, one specimen.

The collector notes that the specimen was taken in a sunny glade in the forest, was a fast flier, and very hard to net. The specimen is worn and the wings damaged.

24. *Euptera pluto kinugnana* ♀, form. *rufa*, forma. nov.

We have given one name to the brown ♀ forms of this species and of *hirundo*, as we see no reason to multiply names where merely a colour form is concerned.

Upperside with markings as in white ♀ and underside more or less unicolorous ochreous with the markings showing through from above.

The females of *kinugnana* show variation in the size of the bands and spots. This is less evident in the males and does not appear to be racial.

Nyasaland, one ♀; "Melanje" (Milanje, Nyasaland), one ♀.

25. *Euptera hirundo lufirensis* subsp. nov. (pl. XI, fig. 25 ♂, 26 ♀).

♂. Upperside with the creamy bands more extended. Fore wing patch in 1b to 1c quadrate, spot in 2 touching or nearly touching the patch below, streaks in 4 and 5 thicker, spot in 6 larger. Hind wing with a broader and more compact band, its distal edge even, patches in 5 and 6 much larger, vein 5 very thickly blackened in the band. Distal marginal area without pale dots in 4 to 6 and darker than in typical form. Tail more obtuse.

Underside much as in typical form but more rufous-brown, and but slightly marked with white. The inner edge of band on hind wing straighter.

♀ f. *rufa*. Upperside with black-brown ground-colour and broad rufous-brown bands. Fore wing with the band more indented on its distal edge, the spots lying within it smaller. Distal margin broader.

Hind wing with outer edge of band strongly dentate and with a series of seven rounded black spots of even size placed within the teeth of the band, the space between each spot and the outer edge being dusted with black.

Underside with markings and coloration of typical form but showing the differences remarked on the upperside.

Described from two ♂♂ one ♀. Kikura River, Lufira Valley, May, 1919 (types); Panda River, Lufira Valley, May, 1919, one ♂.

26. *Euptera hirundo* Stgr. ♀ form. *rufa*, forma. nov.

♀ type. Schultze, Archiv. f. Naturges. 81 Jahr., Ab. A, p. 139 (1915) (S. E. Cameroons).

The first ♀ to be described of this species is described by Schultze, *loc. cit.*, as being white. We now describe a brown form. The species of this group are rare and the ♀♀ exceedingly so. It would not be surprising if all the species had dimorphic ♀♀. *E. pluto* Ward is known to possess two forms of female, and both are represented in the Joicey collection from Nyasaland.

♀. Upperside with black-brown ground-colour and broad rufous-brown bands, which vary in depth of colour. Fore wing with band broad on the inner margin and narrowing beyond vein 3 and ending on vein 7. The proximal edge of band slightly indented between veins 7 and 4, and removed from the cell in this area; the bases of cellules 2 and 3 not filled in by the band. Distal edge of band crenulate and running parallel to the margin, and heavily marked with darker ground-colour. A series of 5 small dark-brown spots lies within the band near the distal edge; the posterior spot is large and heavy and tends to become fused with the submarginal area; spots 3 and 4 are the smaller, and spot 5 lies partly in the dark apical area; there is a spot in 6 just outside the band.

Hind wing with band extending from costa to inner margin and narrower at costa; its proximal edge nearly straight and slightly curved anteriorly, its distal edge evenly curved and marked by a series of large rounded spots of ground-colour; these spots are outwardly faintly outlined by rufous and are separated only by the veins; they decrease in size anteriorly. The outer edge of these spots is heavily marked by darker ground-colour. The submarginal area is broader than on the fore wing.

Underside paler than above, with bands and spots reproduced in

fainter outline. Abdomen black above with dorso-lateral rufous stripes, ventral surface pale brown.

Length of fore wing, 23 mm.

Described from three specimens.—Entebbe, Uganda, August, 1901, A. H. Neuman (type); Entebbe, September, 1900, one specimen; Entebbe, January, 1902, one specimen.

27. *Euryphura porphyron congoensis* subsp. nov. (pl. XI, figs, 21, 22, ♂ 23, 24 ♀).

Distinguished from the typical western form by the more falcate wings, especially in the ♀, and the reduced black markings. Fore wing with the red-brown inner marginal patch reduced proximally. The hind wing with the distal edge of red-brown area sharply toothed between veins 2 and 5.

Underside of fore wing with paler and more extended apical dusting. Hind wing with no black spot at the base of cellule 6.

Length of fore wing, ♂ 32 mm., ♀ 43 mm.

Habitat.—Upper Kasai District, one ♂; Ituri Forest, N. W. Beni, 900 m., January, 1920, T. A. Barns, one ♀.

28. *Euryphura plautilla* ♀ form. *albimargo* form. nov. (pl. XI, fig. 20).

This represents the extreme development of the form *albofasciata* Stgr., and is characterized by the whole distal area of the wings being dirty white.

Fore wing upperside with distal half dirty-white, leaving a narrow outer marginal border; space between postcellular mark and discocellular dusted with brown, also base of cellule 3; markings in distal half reduced, especially the submarginal spots. Hind wing with distal half dirty-white, with slight brown dusting along the outer margin. Markings reduced, especially the submarginal and the discal zigzag line.

Underside much paler than in allied form, and markings indistinct.

Habitat.—Itoa River, Ituri Forest, January, 1920, one ♀.

A specimen in the Joicey collection from the Cameroons is transitional to the above form. It exhibits an increase of white on the fore wing, but is darker on the hind wing.

29. *Diestogyna umbrina* Auriv. ♀ (pl. XII, fig. 28).

We assign this specimen to *umbrina* on account of the basal area of the fore wing below projecting in a tooth on vein 2. The wings are broader than in the allied form.

♀. Upperside very similar to *simplex* Stgr., and *feronia* Stgr. Band of fore wing tinged with yellow, the spot in 3 placed more distal, the one in 2 narrow. The pale discal line placed more distal between 2 and 3 than in allied forms. A dentate postdiscal line, ochreous edged with blackish-brown, between inner margin and vein 2. Hind wing darker than in the allied forms, postdiscal dark spots larger and submarginal line continuous; this distal band more curved, the space between it and the discal line narrower anteriorly than posteriorly.

Underside more like *feronia* than *simplex* but paler than either with increased suffusion of grey. Fore wing with basal area projecting in a tooth on vein 2. Hind wing with discal line enclosing basal area more irregular than in the allied forms. Distal markings distinct, except series of white dots, submarginal line more undulate. A blackish discal patch as in the allied forms.

Length of fore wing, 35 mm.

Habitat.—N. eastern outskirts of Ituri Forest, three days South of Irumu, 1000 m., February, 1920, one ♀, T. A. Barns.

Found in dense forest, feeding on rotting fruit.

30. *Eurypheue laetitioides* sp. nov. (pl. XII, fig. 29 ♂, 30 ♀).

Allied to *laetitia* Ploetz, and not easy to distinguish from it. The underside, however, is greenish and without any of the brown tint of *laetitia*.

♂. Upperside coloration and markings similar to *laetitia*, and fore wing with no constant difference. Hind wing with black discal band not reaching vein 3, generally stopping at vein 2, and indistinctly defined beyond this in Cameroons specimens. Postdiscal band thinner than in the allied species, and spots in 2 and 3 indistinct; second postdiscal band similar, the spots in 2 and 3 mostly indistinct.

Underside markings similar to *laetitia*. Basal area more sharply defined, greyish-green; distal area dull-green, all markings distinct. Fore wing with basal area paler and more greyish than in hind wing, without white markings; distal area more greenish and discal brown curved line strongly marked. Hind wing with violaceous

suffusion on the basal and inner area and at the apex, submarginal line well marked.

♀. Upperside similar to the ♀ of *congolensis* Capr., but smaller, more brownish, and black spots indistinct. Ground-colour brownish-grey with a greenish tinge. Fore wing with black apex and white subapical band (in one specimen with a yellow tinge) reaching vein 4; between this and the cell black, filling cellule 3 and extending into the distal end of cellule 2. A series of submarginal spots edged with grey-brown. Distal margin black, traversed by an indistinct grey-brown admarginal line.

Hind wing marking as in *congolensis* but discal spots small and indistinct. Underside markings very similar to the ♂, the coloration more uniform than in *congolensis*, and distinguished from it by the narrow pale mark in 7 of the hind wing. Ground-colour brownish-grey with markings accentuated by grey-white scaling.

Length of fore wing, ♂ 26 mm., ♀ 30 mm.

Habitat.—Lesse, Ituri Forest, February, 1920, one ♂; Itoa River, Ituri Forest, January, 1920, two ♂♂, two ♀♀ (types); Semliki Forest, E. Semliki Valley, Ruwenzori, December, 1919, one ♂; E. Epulu River, N. Ituri Valley, March, 1920, one ♂; Ituri Valley, N.W. Beni, January, one ♂; between Epulu and Duye Rivers, N. Ituri Valley, March, 1920, one ♂; Lower Butahu River, Semliki Valley, December, 1919, one ♂, two ♀♀; E. side Semliki River, Ruwenzori, November, 1919, one ♀; between Epulu (E. side) and Ituri Rivers, March, 1920, one ♀; Ibima River, Ituri Forest, January, 1920, one ♀; Bitje, Ja River, Cameroons, early May and June, three ♂♂; June, one ♂; dry season, no date, two ♀♀.

31. *Euryphene brunnescens* sp. nov. (pl. XII, fig. 31 ♂, 32 ♀).

Similar to *laetitia* Ploetz, and the form previously described as *laetitioides*, but smaller, brighter in colour, and markings above more as in the latter species, of which it may be only a form.

♂. Upperside with tawny-brown ground-colour, spots smaller than in the allied forms. Fore wing markings distinguished by the black postdiscal band forming a sharp tooth at vein 5; in the typical form this band is reduced anteriorly to a thick dentate line to vein 4. Hind wing markings as in *laetitioides* but less developed in the type.

Underside purplish-brown with a faint greenish tinge. Fore wing darker in the anterior distal half, hind wing paler at the apex. Mark-

ings as in *laetitioides* and in one specimen rather indistinct, the wings in this case being washed with bluish-grey.

♀. The form here described is placed with the ♂ on account of the sharply dentate anterior part of the discal band on the fore wing, and the similarity of pattern on the underside.

Upperside grey-brown, somewhat ochreous in basal area. Fore wing with discal line dentate to vein 3 and edged with white distally from costa to vein 3, this white extending in one specimen to the submarginal line. Hind wing with discal and postdiscal spots slightly white-edged in cellules 4—7.

Underside grey-white with reddish-brown markings.

Length of fore wing: ♂ 25 mm., ♀ 32 mm.

Habitat.—Between Epulu and Duye Rivers, N. Ituri Valley, March, 1920, one ♂ (type); Itoa River, Ituri Forest, January, 1920, one ♂; Penghe, N. bank Ituri River, March, 1920, one ♂; Butahu River, under Ruwenzori, S. Semliki Valley, December, 1919, one ♂, T. A. Barns; between Epulu (E. side) and Ituri Rivers, March, 1920, one ♀ (allotype); between Penghe and Irumu, March, 1920, one ♀, T. A. Barns. Semliki Valley, one ♂. In B.M. from "Congo Forest, 6, ii, 1907, A. F. R. Wollaston," one ♂.

32. *Euphaedra ceres* f. *phosphor* form. nov. (pl. XII, fig. 33).

Distinguished by its whitish-green coloration above.

♂. Upperside with the markings pale-green washed with yellow, darker at the base.

Underside pale green, washed with paler yellow on the hind wing, subapical band white and well defined. Hind wing with indistinct white discal band on the distal half, whitish submarginal area darker than the rest of the wing.

Habitat.—Albertville, June, 1919, three ♂♂.

33. *Euphaedra preussi* f. *obsoleta* form. nov.

This curious form indicates a relationship with *inanim* Butl., but the appearance of the upperside shows a stronger affinity to *preussi*. Distinguished by the deep blue colour, extending nearly to vein 2 on the fore wing, and by the green underside without a distinct white costal stripe.

♀. Upperside dark blue as in *preussi*, on the fore wing reaching nearly to vein 3. Subapical band white and sharply defined. Hind wing without distinct submarginal spots.

Underside bluish-green with brownish reflections in a side light. Fore wing with three black cellspots and the subapical band well defined. Hind wing with a short white stripe in 7, merging into the ground-colour; three indistinct white discal spots; series of submarginal indistinct spots a little darker than the ground-colour.

Habitat.—Itoa River, Ituri Forest, January, 1920, 1 ♀.

A specimen of *preussi* ♀ approaches the above form in the development of a greenish tint on the underside.

34. *Euphaedra lupercoides* Roths. ♀.

Upperside similar to the ♂. Fore wing band narrower than in *luperca* Hew., and white apical spot a little smaller.

Underside similar to the ♂. Inner margin of fore wing, and parts of the distal areas of both wings, cinnamon-brown.

Habitat.—Between Lindi and Lubila Rivers, north of Batama, April, 1920, 1 ♀.

35. *Euphaedra eleus* ♀ f. *cocrulea* form. nov.

This striking form is very similar to *preussi* Stgr., but distinguished by the cell of the fore wing being entirely blue, the hind wing with a row of distinct submarginal spots and some brown distal scaling. It represents a further development of the form *semiprussiana* Wichg.

♀. Upperside with black ground-colour. Fore wing with blue basal half, filling the cell and basal part of cellule 3. Cell with two black spots. Subapical band white and clearly defined, composed of four spots. Hind wing blue, paler distally, with some brown scaling in the distal part of cellules 4—7. A black submarginal border of nearly even width, bearing a series of violet-blue submarginal spots.

Underside dark ochreous-brown, paler at the margins. Fore wing with three black cellspots and a black discocellular spot. Hind wing with a black cellspot, two whitish streaks in 3 and 4, and small pale-brown submarginal spots.

Habitat.—Ituri Forest, thirty miles south of Irumu, February, 1920, one ♀, T. A. Barns.

36. *Euphaedra eleus nigrobasalis*, subsp. nov. (pl. XII, fig. 34 ♂; XIII, 35 ♀).

Distinguished from *eleus orientalis* Roths. by the costa and upper part of cell being black to the base, leaving only a narrow stripe of red-

brown along lower margin of cell, by the red-brown area only reaching origin of vein 3, by the narrow white subcostal stripe on hind wing below, and the absence of the submarginal row of spots. The distal margin of hind wing above is of more even width and not wider on the anal area; and the spots in it are blue without white tinge.

Habitat.—Panda River, Iufira Valley, S.E. Congo, May 12, 1919, one ♂ two ♀ ♀, T. A. Barns.

37. *Charaxes imperialis albipuncta* subsp. nov.

Distinguished chiefly by the larger band on the hind wing of the ♂, and the white-spotted ♀.

♂. Upperside of fore wing not constantly different from typical form. Hind wing with a broader band in most specimens. The inner spot in cellule 7 is blue or only slightly white.

Underside of fore wing with the yellow proximal border to the black submedian spot edged with blue, and this again with black proximally. Hind wing with the postdiscal bar in cellule 7 either without white distal scaling or with only a trace of it.

♀. Upperside of fore wing with the spots white and smaller than in typical form. The black inner marginal band is reduced anteriorly and does not reach vein 2. Hind wing with the band not reaching vein 7. The outer spot in cellule 7 smaller and without any brown tinge. Submarginal and admarginal spots white.

Underside as in the ♂. Fore wing with spots as above. No spot bordering the submedian bar. Hind wing with postdiscal spots further from the discal bars than in typical form.

In the Joicey collection from: Bitje, Ja River, Cameroons, 2,000 ft., dry season, 1 ♂, early May and June, wet season, 1 ♀ (allotype); Bitje, Cameroons, 1 ♂; Bipindi, Cameroons, 1 ♂; ~~Cameroons, 2 ♀♀~~; Upper Kasai District, Congo Belge, 3 ♂♂; N. bank, Ituri River, halfway between Avakubi and Penghe, March, 1920, T. A. Barns, 1 ♂.

The specimen obtained by Mr. Barns was taken on dung.

The ♂ holotype is from Bitje, Ja River, Cameroons, September 7, 1919, G. L. Bates, and is in the collection of Madame de Horrack Fournier, 90, Boulevard Malesherbes, Paris. There is also 1 ♂ from the East Congo in this collection.

38. *Charaxes zelica depuncta* subsp. nov.

Distinguished from the typical form by the absence of the blue marginal dots on the hind wing. The inner edge of the distal area of

the underside is less curved on the fore wing and almost straight on the hind wing. In cellules 1b and c of the fore wing is a pale ochreous patch distal to the postdiscal line, and generally a similar patch proximal to the discal line. The submarginal line on the fore wing ends at the apex; in the typical form it ends at vein 8.

Habitat.—Uganda, Mabira Forest, January 29, 1912, 1 ♂ (type); W. Uganda, Budonga Forest, April 6 to May 16, 1912, 2 ♂ ♂, Captain J. Fraser; Mabira Forest, 4,000 feet, R. A. Dummer, 1 ♂; Kasai District, Congo, 1 ♂; Singa, French Congo, 1 ♂; Cameroons, 1 ♂; Bitje, Ja River, Cameroons, 2,000 feet, dry season, 1 ♂.

Also typical form in Joicey collection, Coomassie, Sierra Leone, 1 ♂.

Charaxes eupale Drury, *dilutus* Roths. and *subornatus* Schultze.

The forms of *Charaxes* comprised under the above names present an interesting group. All are similarly coloured and exhibit similar and variable markings. Our knowledge of the distribution of these forms is now well advanced, and series of all are contained in the Hill Museum. We have therefore attempted to analyse the group with a view to ascertaining how many definite forms exist, and whether such forms could be grouped together under one or more distinct species.

Sixteen dissections of the genitalia were made and drawings prepared by Mr. Birbel. When these were compared with the insects the results were found to be unsatisfactory. It was at once apparent that much variation existed in the genital armature, and these variations were not in agreement with the differences observed in the wing-markings.

The dissections, drawings, and insects were submitted to Dr. Jordan for an opinion. He very carefully examined them, together with further specimens in the Tring Museum, and reported that no reliable distinction could be obtained from the genitalia. He thought that probably three species could be made out on other grounds. These results confirmed our own, with a slight difference in the grouping of the three species.

We believe that the three species may be grouped as follows:—

- | | | |
|-------------------|-----|------------------------------------------------------------------------------------------------------|
| <i>eupale</i> | ... | { <i>eupale eupale</i> .—Sierra Leone to the Niger. |
| | | { <i>eupale</i> subsp.—Cameroons to Uganda. |
| <i>dilutus</i> | ... | <i>dilutus dilutus</i> .—Angola to Nyasaland, northward to Ruwenzori, Nairobi District and Zanzibar. |
| <i>subornatus</i> | ... | { <i>subornatus subornatus</i> .—Cameroons to Congo. |
| | | { <i>subornatus</i> subsp.—Ituri Forest to Uganda and Nairobi. |

It will be seen that the *eupale* subsp. and *dilutus* overlap in distribution but we have no evidence of both occurring in the same place.

C. eupale subsp. is found together with *subornatus* in the Cameroons, and if our diagnosis is correct it also occurs with a race of *subornatus* in Uganda and the Ituri.

C. dilutus is not known farther west than Angola, but occurs together with a *subornatus* form at Nairobi.

The three species may generally be easily distinguished, but the *subornatus* race may be confounded with *dilutus*. It will therefore be useful to give here the results of certain measurements which indicate not only the three species but also the races and to which species they belong.

On the underside of the hind wing there is a row of antemarginal spots and a row of what may be termed submarginal spots. The arrangement of these series of spots is not the same in each species, and a comparison of typical *subornatus* with *eupale* subsp. will show that the antemarginal spots are nearer the margin in *subornatus* than they are in *eupale*, and that the spots of the submarginal series occupy different positions in the two species, especially the spot in cellule 3. The submarginal spot in cellule 6 is more or less removed from the band, owing to the straighter or more oblique position of the band. Measurements were made (1) of the distance between the antemarginal dot in cellule 3, measured from the centre of the black dot, and the outer edge of the submarginal dot in 3; (2) of the distance between the submarginal dot in cellule 6 and the inner edge of the band.

These measurements were made on specimens which showed the markings plainly. It sometimes happens that specimens occur with the spots absent. The following specimens were taken:—

<i>C. eupale eupale</i>	...	...	...	10
<i>C. eupale</i> subsp.	...	...	...	52
<i>C. dilutus</i> ...	...	...	...	25
<i>C. subornatus</i>	...	...	...	4
<i>C. subornatus</i> subsp....	...	...	...	9

The results are tabulated on next page.

1. The measurement in cellule 3:—

eupale, fifty-two specimens have a distance of from 2 to 2·5 mm.

subornatus, nine individuals have a distance of from 2·0 to 2·5 mm.

dilutus, nineteen individuals have a distance of from 3·0 to 3·5 mm.

Whilst *subornatus* agrees with *eupale*, in *dilutus* the distance is greater between the two points.

2. The measurement in cellule 6 :—

eupale, forty-one individuals have a distance of from 3·5 to 4 mm.

subornatus, nine individuals have a distance of from 5·5 to 6 mm.

dilutus, sixteen individuals have a distance of from 4·0 to 5·0 mm.

TABLE.

Distance between the antemarginal dot in 3, measured from the centre of the black dot to the outer edge of the submarginal dot in 3.					Distance between the submarginal dot in 6 to the inner edge of the band.				
Form	Distance in mm.	No. of specimens			Distance in mm.	No. of specimens	Total No. of specimens examined		
<i>eupale eupale</i> ...	2·0	1	—		3·0	5	}	10	
	2·5	9	—		3·5	4			
			—		4·0	1			
<i>eupale</i> subsp. ...	1·5	3	—		2·5	1	}	52	
	2·0	26	—		3·0	8			
	2·5	16	—		3·5	25			
	3·0	5	—		4·0	11			
	3·5	1	—		4·5	5			
	4·0	1	—		5·0	2			
<i>dilutus</i> ...	2·5	2	—		3·5	4			
	3·0	10	—		4·0	6			
	3·5	9	—		4·5	5			
	4·0	1	—		5·0	5			
	4·5	2	—		5·5	4			
	5·0	1	—		6·0	1			
<i>subornatus</i> ...	1·5	4	—		6·0	1			
			—		6·5	3			
<i>subornatus</i> subsp.	2·0	4	—		5·0	1			
	2·5	5	—		5·5	3			
			—		6·0	5			

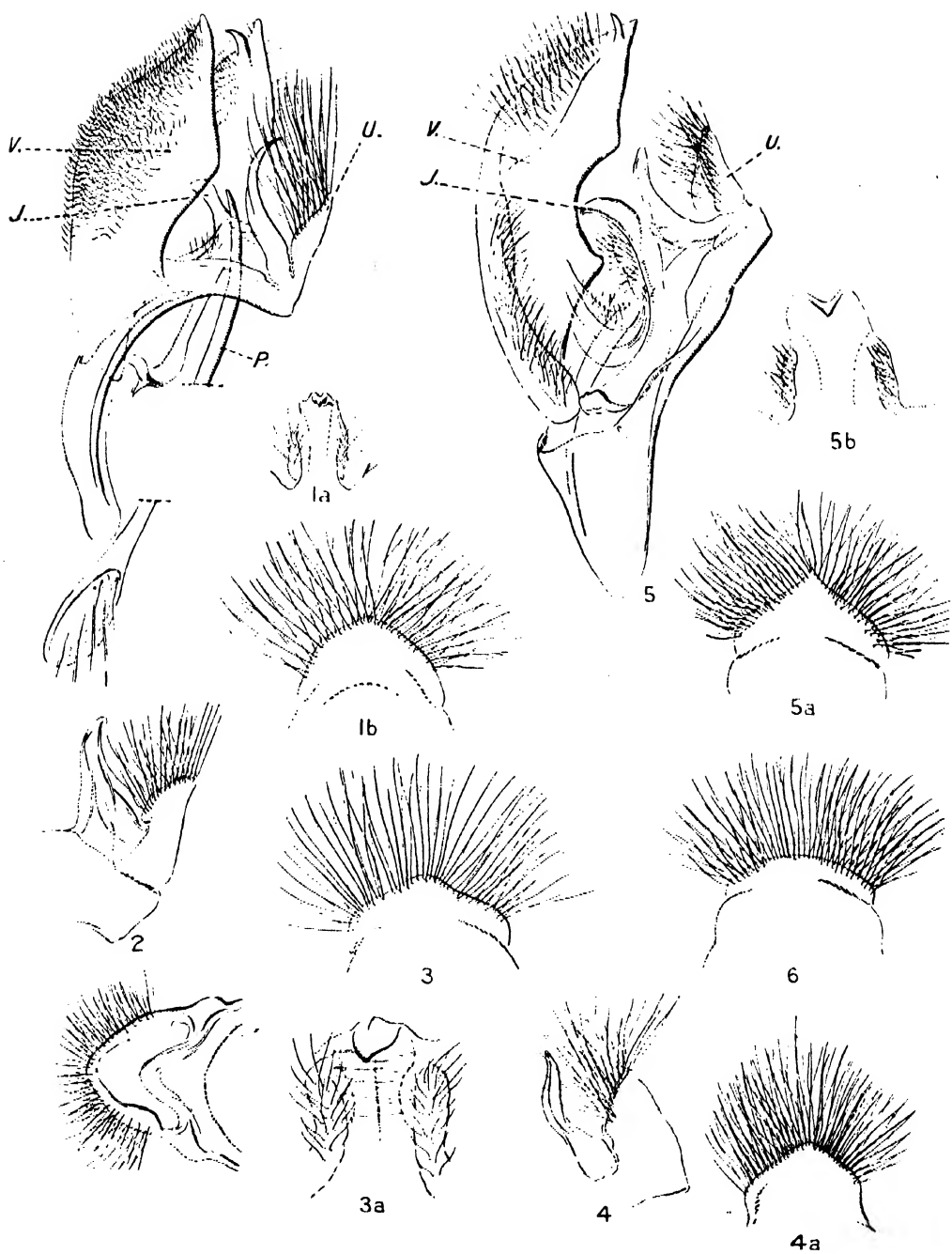
This measurement gives three different results.

Although it may be argued that the material measured is too small, the differences observed are correlated with the other more recognised differences.

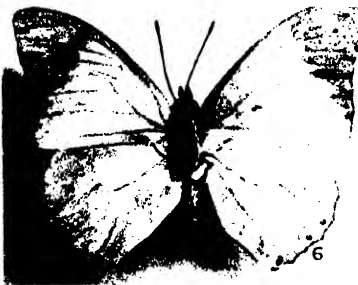
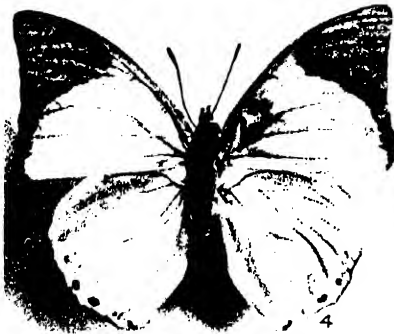
GENITALIA OF CHARAXES.

PLATES VI—VII.

- | Plate
VII. | Plate
VI. | |
|---------------|--------------|----------------------------------------------------------------------|
| Fig. 1. | Fig. 1. | <i>C. cupale cupale</i> (Sierra Leone). |
| | 1a. | <i>C. cupale cupale</i> , posterior end of juxta, ventrally. |
| | 1b. | <i>C. cupale cupale</i> , uncus, dorsally. |
| Fig. 2. | Fig. 2. | <i>C. dilutus</i> (Nyasaland), anal ring and uncus, laterally. |
| | 2a. | <i>C. dilutus</i> , anal ring, ventrally. |
| Fig. 3. | Fig. 3. | <i>C. dilutus</i> , uncus, dorsally (Nyasaland). |
| | 3a. | <i>C. dilutus</i> , posterior end of juxta. |
| Fig. 4. | Fig. 4. | <i>C. dilutus</i> , uncus and anal ring, laterally (Nairobi). |
| | 4a. | <i>C. dilutus</i> , uncus dorsally. |
| Fig. 5. | Fig. 5. | <i>C. subornatus subornatus</i> (Upper Kasai River). |
| | 5a. | <i>C. subornatus subornatus</i> , uncus, dorsally. |
| | 5b. | <i>C. subornatus subornatus</i> , posterior end of juxta, ventrally. |
| Fig. 6. | Fig. 6. | <i>C. subornatus</i> subsp., uncus, dorsally (Nairobi). |
| Fig. 7. | — | <i>C. dilutus</i> , S.E. Congo. |



GENITALIA OF AFRICAN CHARAXES.



FORMS OF CHARAXES EUPALE, DILUTUS, AND SUBORNATUS.

The form we have placed as a race of *subornatus* was not easy to separate from *dilutus*, but the measurements taken do not bring it in the *dilutus* series. We give the points of differentiation in our description of the race.

We regret that more specimens of these forms were not available, but if we take the tendency shown by these together with the general coloration and pattern, the probability is that our division and sub-division is correct.

The times of appearance, according to data preserved on specimens in the Joicey and other collections, are as follows:—

<i>C. eupale eupale</i>	...	...	No data.
<i>C. eupale</i> subsp.	...	...	January to October.
<i>C. dilutus</i>	...	...	December and April.
<i>C. subornatus</i>	...	...	April to December.
<i>C. subornatus</i> subsp.	...	...	January to April.

It does not appear that we have to deal with any seasonal forms.

Genitalia.—(Plate VI.)

The most obvious differences to be noticed in the series examined occur in the uncus, in the juxta, and in the valves.

The extreme forms of uncus are seen in *subornatus* (fig. 5a), and in *subornatus* subsp. (fig. 6), but all intermediate forms were found.

The juxta (also known as ring-wall and penis-funnel) exhibits its extreme forms in *eupale eupale* (fig. 1a), *dilutus* (fig. 3a), and *subornatus subornatus* (fig. 5b).

A setose membrane connects the lateral edges of the juxta with the inner surface of the valves. This membrane, near its attachment to the juxta, develops into a slightly chitinized process, also covered with setae, and this process exhibits small variations, especially in its proportions as compared with the rest of the organs.

Finally the valve exhibits two different formations of the dorsal edge as shown in *eupale* (fig. 1) and in *subornatus subornatus* (fig. 5).

For other details see explanations facing plate.

The following specimens were examined:—

<i>C. eupale eupale</i>	...	Sierra Leone, 2.
<i>C. eupale</i> subsp.	...	Cameroons, 1; Uganda, 1.
<i>C. dilutus</i>	...	Nyasaland, 6; South-East Congo, 1; Nairobi, 1.
<i>C. subornatus</i>	...	Cameroons, 1; Congo, 1.
<i>C. subornatus</i> subsp.	...	Uganda, 1; Nairobi, 1.

The forms from which drawings of genitalia were made are figured on plate VII.

It may be possible to make a further study of the genitalia when many more specimens of the rarer forms become available.

39. *Charaxes eupale latimargo* subsp. nov.

Distinguished from the West Coast *eupale*, by the larger basal area on the fore wing and the narrow marginal brown on the hind wing.

♂ ♀. Upperside of fore wing with pale basal area extended and nearer the tornus than in the type form. Hind wing with marginal brown not extended beyond the line of submarginal spots.

Underside of hind wing with the submarginal dot in cellule 3 farther from the antemarginal dot than in the type form. In cellule 6 the distance between the submarginal spot and the inner edge of the band is slightly more than in the type form.

In the Joicey collection from Cameroons, Bitje, Ja River, 2,000 feet, dry season, four ♂♂ one ♀; wet season, one ♂ one ♀ (♀ allotype); early May and June, wet season, four ♂♂; Bitje, one ♂; Cameroons, one ♀; Bipindi, Cameroons, September, two ♂♂, October, four ♂♂; Bipindi, three ♂♂; Kibokolo do Zombo, Portuguese Congo, one ♂; Luluabourg, Kasai District, two ♂♂; Kunzulu, le Moyen, Congo Belge, dry season, one ♂; Aruwimi, one ♂; Upper Congo, one ♂; Upper Kasai District, three ♂♂; Longgi, two ♂♂; Semliki, one ♂; North bank of Ituri River, half-way between Avakubi and Penghe, May, 1920, six ♂♂; coll. T. A. Barns (type); Itoa River, Ituri Forest, January, one ♂, T. A. Barns; Uganda, coll. Jackson, four ♂♂; Entebbe, August, 1901, A. H. Neumann, four ♂♂; Entebbe, January, 1902, one ♂; Entebbe, one ♂; Uganda, one ♂; Toro, January, two ♂♂; Nyanza, two ♂♂; Mabira Forest, Uganda, April-August, 1919, two ♂♂.

40. *Charaxes subornatus minor* subsp. nov. (pl. VII, fig. 6).

Distinguished by its smaller size and the less strongly-marked underside.

♂. Upperside of fore wing as in type form, and differentiated from *dilutus* by the even and more regularly toothed edge of the basal area. Hind wing with the bluish costal shade not extended below vein 7.

Underside paler green, discal band less defined and not so white.

Hind wing with the submarginal dot in cellule 3 farther from the

antemarginal dot than in the type form, but nearer than in *dilutus*. Discal line straighter than in *dilutus*.

C. subornatus is further distinguished below by the fore wing with cell patch extending into cellule 2, and by a pair of black submarginal dots near the termen.

Length of fore wing: 31 mm. Breadth from apex to tornus: 32 mm.

Type form. Length of fore wing: 32 mm. Breadth: 25 mm.

In the Joicey collection from Nairobi, three ♂♂; Mabira Forest, Uganda, April-August, 1919, three ♂♂ (type); Ituri Forest, N.W. Beni, January, 1920, T. A. Barns, one ♂; E. Epulu, N. Ituri Valley, between Penghe and Irumu, March, 1920, one ♂, T. A. Barns.

In the collection of Mdme. de Horrack-Fournier,—Mabira Forest, Uganda, sixteen ♂♂.

C. subornatus Schultze, is in the Joicey collection from Bitje, Ja River, Cameroons, April, two ♂♂; early May and June, wet season, one ♂; Upper Kasai District, Congo, one ♂; French Congo, one ♂.

In the Congo Museum, Tervueren,—Bili à Lebe, Congo, November-December, 1912, one ♂; Bilinyama-Tale, Congo, April 12-20, 1911, one ♂.

41. *Euxanthe crossleyi intermedia* subsp. nov. (pl. XIII, figs. 36, 37).

This form resembles the typical one in the large patches of the fore wing and the extended discal patches of the hind wing. It resembles *ansorgei* R. and J., in the well-developed postcellular patch of the hind wing, which, however, is not produced to a point as in the two allied forms, and in two stripes filling cellules 1a and 1b. The admarginal white spots of the hind wing are larger than in any specimens we have seen from the Cameroons, Kasai, and Uganda.

Habitat.—Itoa River, Ituri Forest, 1,000 m., January, 1920, 1 ♂ (type); Ibima River, Ituri Forest, January, 1920, 1 ♂.

These two specimens are identical.

Mr. Barns notes that this species flies high, and is fond of resting on dry twigs high up, or occasionally on the bark of a tree. Found in glades in thick forest, feeding on tree gums. The habit of the species is similar to that of the *Liptenines* and it was on this account not associated with *Charaxes* by Mr. Barns.

SATYRIDAE.

42. *Mycalesis asochis congoensis* subsp. nov.

Distinguished by the extended white areas on both wings, and the less deeply curved dark distal line below.

♂. Upperside of fore wing with the white area more extended in the cell. Hind wing with the white area more extended between veins 1a and 4.

Underside without any basal yellowish suffusion. The dark brown border to the ocelli is straighter than in the typical form. The spot in cellule 3 on the hind wing is more strongly developed.

Habitat.—Between Lindi and Lubila Rivers, north of Batama, April, 1920, one ♂ (type); north side of Maiko Valley, near Stanleyville, May, 1920, one ♂; Tshopo Valley, near Batama, April, 1920, one ♂, T. A. Barns; Kassai River, one ♂.

Found in dense forest and infrequent.

43. *Mycalesis persimilis* sp. nov. (pl. XIII, figs. 38, 39 ♂, 40 ♀).

Allied to *martius* F., but larger and with broader distal area below.

♂. Upperside black with bluish reflection in side-light. Fore wing with short hair covering cell and basal part of cellules 1a, 1b, 2 and 3, but not forming tufts as in *martius*. Hind wing with a grey hair-pencil at base of cell, and a black hair-pencil at base of cellule 6. Basal area and inner margin covered with short hair, longer in the cell, and projecting beyond it.

Underside black-brown, distal area paler and broader than in *martius*. The line marking outer edge of basal area straighter than in *martius*. Fore wing with eye-spot in 2 scarcely larger than in *martius*, four small ocelli in 3—6, the one in 5 larger and the others more punctiform. The glossy area not extended beyond line limiting basal dark area. Hind wing with five ocelli, the one in 2 smaller than in *martius*, the one in 1c a little smaller, the others smaller still, those in 3 and 4 being punctiform. The area surrounding the ocelli on both wings is only slightly paler than the ground-colour.

♀. Resembles *martius*, but is larger and subapical band is broader and more distinctly defined. Underside resembles the male. The margin and apical area of the fore wing is more yellowish than in *martius*. The outer edge of basal area on hind wing slightly undulate and sharply defined.

Length of fore wing: ♂ 23—26 mm., ♀ 26 mm.

Habitat.—Ruwenzori, western slopes, December, 1919, 2,200 m., two ♂♂, one ♀ (types); Upper Butahu River, Ruwenzori, 1500-1800 m., December, 1919, two ♂♂, T. A. Barns.

ERYCINIDAE.

44. *Abisara barnsi* sp. nov. (pl. XIII, figs. 41, 42).

Allied to *talantus* Auriv., having the same neurulation-structure in the hind wing

♀. Upperside coloration as in other species of the group. Fore wing without apical ocellus; a discal blue band, somewhat triangular, anteriorly narrowed, reaching from inner margin to origin of vein 6, indistinct in the lower angle of cell, inner edge reaching slightly beyond origin of vein 2, outer edge even. A pale postdiscal narrow band from costa to near tornus. Hind wing with a narrow blue transverse band from 2 to 7 near apex where it narrows to a point; this band fills lower angle of cell and the base of cellules 3 and 4. A double apical eye-spot as in allied forms. Two faint bluish submarginal lines between veins 2 and 4, joined to form a kidney-shaped spot.

Underside paler. Fore wing with whitish oblique discal line from costa to vein 2. A similar postdiscal line from costa to inner margin, curved below vein 2. A thinner submarginal line from vein 7 to a point between 2 and 3 where it joins the postdiscal line. Hind wing with a slightly curved whitish discal line from middle of inner margin to costa before the apex. Two crenulate submarginal lines between veins 1b and 4, joined posteriorly. Eye-spots as above.

Length of fore wing: 20 mm.

Habitat.—Butahu River, Semliki Valley, December, 1919, 1,000 m., one ♀.

Mr. Barns notes that this species has the habit of *A. rogersi* in hopping, rather than flying, from leaf to leaf, and is easily caught. Feeds on plant-juices. Rests with wings closed and is not easy to see.

LYCAENIDAE.

45. *Telipna angustifascia* sp. nov. (pl. XIV, fig. 43).

This species is allied to *semirufa* S. and K. with which it has been confounded hitherto. *Semirufa* is probably only a form of *bimacula* Ploetz. Distinguished by the narrow oblique band of the fore wing.

♂. Upperside of fore wing with orange-red discal band, 3 mm.

to 6 mm. broad on vein 2, and 7 mm. broad at most on the inner margin; this band narrows anteriorly and reaches vein 4 or before it, and does not extend to the base of cellules 2 and 3. A small ochreous spot, which may be absent, is placed in 4 and 5 in a subapical position. Hind wing with band as in *semirufa*, but sometimes narrower.

Underside markings much as in *semirufa*. Fore wing with broader black outer margin above vein 3 and ochreous marginal spots. Black costal stripes heavier and continued to lower edge of cell. A black discal spot in 3 placed free in the centre of band. Hind wing with heavier black costal markings than in *semirufa*. A black spot at the base of cellule 1c. The distal edge of the band is less strongly dentate than in the allied forms, and does not project so far in cellule 4, the wider black area in this region bearing a fifth small ochreous spot. There are only four submarginal spots in the allied forms.

♀. Upperside with paler markings. Fore wing with slightly broader discal band than in ♂, especially so the spot in 3. Subapical spot larger, or forming a patch extending to vein 10. Hind wing with paler band, narrower than in ♂, not reaching the base and somewhat broken costally; outer edge of band extending from inner margin to vein 7.

Underside as in the ♂.

Fringes black in ♂, in ♀ with white dots between veins.

Length of fore wing, ♂ 21-25 mm., ♀ 20-23 mm.

Habitat.—Dense forest near Bafwaboli, N. side Tshopo Valley, T. A. Barns, one ♂ (type); Upper Kasai District, Congo Belge, P. Landbeck, two ♀♀ (♀ allotype); Bitje Ja River, Cameroons, 2,000 feet, October-November, 1912, G. L. Bates, one ♀; S.W. of Upper Kasai District, P. Landbeck, one ♂; two ♂♂, loc. ?, ex. coll. Suffert.

In the British Museum from Uganda, Budongo Forest, Unyoro, 3,400 feet, December, 1911, S. A. Neave, one ♂, two ♀♀; Entebbe, January, 1912, S. A. Neave, one ♂; Mabira Forest, Chigwe, 3,500-3,800 feet, July, S. A. Neave, one ♂, one ♀.

46. *Telipna subhyalina* sp. nov. (pl. XIV, fig. 48).

Allied to *carnuta* Hew., but distinguished by the thinly-scaled fore wing, reduced ochreous basal area and narrower dark margin on the hind wing.

♀. Fore wing with very thinly scaled discal area. Upperside with black ground-colour and distinct black discocellular spot. Basal area

pale orange, forming a triangular area reaching from upper margin of cell to near the tornus, and extending into the base of cellule 2. Hind wing pale orange with black marginal border, narrower than in *carnuta*, from costa to cellule 3.

Underside paler than in *carnuta* but with similar markings. Fore wing with distal area thinly scaled with grey-white, which forms a curved band between veins 6 and 2; a grey-white submarginal line followed by an ochreous-yellow fine marginal line. Hind wing with grey-white submarginal line more strongly marked than in *carnuta*.

Length of fore wing 14 mm.

Habitat.—N. Ituri Valley, E. of Epula River between Penghe and Irumu, March, 1920, one ♀ (type); Penghe, N. bank Ituri River, March, 1920, one ♀.

47. *Telipna plagiata* sp. nov. (pl. XIV, figs. 44, 45).

Perhaps more nearly allied to *bimacula* Ploetz, but resembling *nyanza* Neave above in the extent of the orange colour.

♀. Upperside of fore wing with pale orange area extending from base, to outer angle and beyond the cell to a distance less than half the width between end of cell and outer margin, and reaching anteriorly to base of 12, basal third of 11, basal half of 10, and base of 6, leaving a narrow black costal margin and a broad black distal area which narrows posteriorly to the submedian. A white subapical band of three spots in 4—6, touching, or almost touching, the orange area. Hind wing pale orange with black distal margin, 3 mm. broad, narrowing posteriorly.

Underside pale yellowish-orange. Markings similar to *bimacula*. Fore wing with black markings less developed than in *bimacula*, the outer costal bar only reaching vein 5 with a small spot in cellule 4. Outer margin without any black border, but with small black marginal spots on the veins and the spaces between these spots white. Hind wing with thinner costal stripes than in *bimacula*, and with large white distal spots.

Fringes black, with small white spots between the veins.

Length of fore wing: 28 mm. Larger than the majority of ♀♀ in the genus.

Habitat.—Lower Butahu River, Semliki Valley, December, 1919, one ♀ (type); Itoa River, Ituri Forest, January, 1920, one ♀.

Mr. Barns notes that this form is "slow of flight like an *Acraea*."

48. *Telipna hollandi* sp. nov. (pl. XIV, figs. 46, 47).

Allied to *medjensis* Holl., Bull. Amer. Mus. Nat. Hist., vol. xliii, p. 214, pl. xii, fig. 8 (1920) (Congo). Distinguished by the broader dark margins and the more marked undersurface.

♂ ♀. Upperside very similar to *sanguinea* Ploetz. Fore wing with orange area of same extent as in *sanguinea*, and subapical spots as large as in the ♀ of this species. Hind wing with marginal border narrower than in *sanguinea*, especially anteriorly. ♂ with or without, ♀ with, white marginal spots, but smaller than in *sanguinea*. Cilia more or less chequered with white as in *medjensis*.

Underside with similar markings to *medjensis*. Fore wing with white subapical patch also edged with black outwardly, a black discocellular bar, and short costal bars in the cell. Hind wing with white area sharply defined and extended above vein 4 to the level of the fifth costal bar or beyond it. Black marginal border broader than in *medjensis*; white marginal spots oblong as in this species.

Length of fore wing: ♂ 23 mm., ♀ 26 mm.

Habitat.—Ituri Forest, N. W. Beni, January, 1920, T. A. Barns, one ♂ (type); Upper Kassai District, P. Landbeck, one ♀ (allotype), and three ♂♂.

49. *Pseuderesia neavei* sp. nov. (plate XIV, figs. 49, 50).

Distinguished from any other described species by the steely-blue upper surface. Dedicated to Dr. S. A. Neave, who first took this species.

♂. Upperside steely-blue with an admixture of green, and black-brown stripes between the veins. Fore wing with apical area black-brown, shading into the blue.

Underside of fore wing with grey-black ground-colour, distal area orange from origin of vein 6 to 2, narrowing posteriorly; costa and a stripe along upper margin of cell orange broken by ground-colour, forming a dark middle costal spot from which proceeds a dark costal line broadening out at the apex and becoming submarginal and thinner to vein 4; this line and the dark costal marks are dusted with white.

Hind wing brick-red with mouse-grey markings. An indistinct costal spot in cellule 8, a larger one with a black centre below it in 7, and a larger distal spot edged outwardly with black, and touching veins 8 and 7, a small one at base of 7, a discocellular spot with a black centre between veins 4 and 6, a middle cell spot, not touching upper margin, joined to one with a black centre between base of 2 and the submedian a series of 7 distal spots, one on inner margin, the second,

third and fourth nearly in line in cellules 1b—1c, 2 and 3, the fifth more distal in 4, the sixth and seventh more proximal in 5 and 6, all edged with black outwardly; a narrow submarginal line, thinly edged with black on the inside; outer margin narrowly black, fringes grey; inner margin grey, joined to the submarginal line at the submedian.

Antennae black, ringed with white, palpi black marked with white, eyes brown, edged with white; head and thorax black; abdomen darker blue than wings, ventral surface grey; legs black marked with white.

♀. Resembles *libentina* Hew. Upperside of fore wing with a brick-red band from vein 6, just beyond cell to base of vein 2, sometimes reaching submedian, widest in cellule 3 and narrowing anteriorly. The cell, costal area, apical area, and margins black-brown. Hind wing black-brown with incomplete brick-red discal band between veins 6 and 2, becoming broken and fading out posteriorly; in one specimen this band is reduced to a few small scattered patches of scales.

Undersurface resembles ♂. Fore wing with a black curved apical band from costa to vein 3, in one specimen to vein 2. Hind wing with the red areas reduced.

Length of fore wing: ♂ ♀, 15 mm.

Habitat—W. Semliki River, near Lesse, January, 1920 (type) ♂; W. Semliki River, Cartouche, January, 1920, four ♂♂.

In the British Museum coll. Neave, Semliki Valley, Buamba Forest, 2,300-2800 feet, July 3, 1911, three ♂♂; Mpanga Forest, Toro, 4,800 feet, November, 1911, four ♂♂ five ♀♀; Budongo Forest, Unyoro, 3,400 feet, December, 1911, four ♀♀.

Mr. Barns notes that this species is found resting on stems of large trees in open glades of the forest.

50. *Pentila auga congoensis* subsp. nov. (pl. XIV, fig. 51).

Distinguished by the shorter stripes on both sides of hind wing, and the absence of the spot in cellule 1c of hind wing below.

♂. Upperside of fore wing with vein-stripes 2 and 3 a little shorter, marginal spots in 4 to 7, costal spots larger and outer cell-spot smaller than in type, spot below vein 2 absent. Hind wing with reduced marginal stripes, no spot in cellule 2.

Underside with shorter marginal stripes on both wings. Fore wing without a spot below vein 2. Hind wing with no spot in cellule 1c.

♀. Larger and paler. Vein stripes shorter than in the ♂. Fore wing with spot in base of cellule 3.

Habitat.—Itoa River, Ituri Forest, January, 1920, one ♂ (type);

Lower Butahu River, Semliki Valley, December, 1919, one ♀. Found in dense forest.

51. *Citrinophila terias* sp. nov. (pl. XIV, fig. 53).

This species is allied to *erastus* Hew., and resembles the smaller and more widely margined specimens of *Terias brigitta*. Intermediate in size between *erastus* and other species of the genus.

♀. Upperside pale yellow as in *erastus* ♂.

Fore wing with black distal area, broader apically, and extending narrowly along costa from above the cell, inner edge slightly curved anteriorly to vein 4 and thence straight to inner margin before the outer angle. Hind wing with black marginal border at least 2 mm. broad from vein 7 to anal angle, with some sparse scaling along inner margin; this border slightly incurved between veins 5 and 7, as in *erastus*.

Underside creamy-white, deep yellow at base. A marginal series of black spots on both wings, the apical spot in both wings being the larger; these spots with ill-defined edges as in *erastus*.

Coloration of body and appendages as in *erastus*.

Length of fore wing, 16 mm.

Habitat.—Ituri Forest, N. W. Beni, January, 1920, one ♀ (type); Itoa River, Ituri Forest, January, 1920, one ♀.

Found in dense forest at 900 m.

52. *Liptena ilma lathyi* subsp. nov. (pl. XIV, fig. 52).

This striking form is at once distinguished by the white patch on the fore-wing above.

♂. Upperside with ground colour as in *ilma* Hew. Fore wing with a large white discal patch, variable in size, reaching to just above vein 3, filling base of cellule 3 and generally the base of 2, extending a little below vein 2 and distally reaching the submedian, curved on its outer edge, and from 3 to 5 mm. broad at vein 2. Black discocellular spot much larger than in typical form. Hind wing with large discocellular spot, and white costal area reaching vein 7.

Underside as in typical form but with longer discal black spots, extended brown apical patch, and the postdiscal brown line on the hind wing strongly marked.

Length of fore wing: 14 to 15 mm.; *ilma*, 12 to 13 mm.

Habitat.—Rutshuru River, N. Kivu, November, 1919, five ♂♂.

53. *Eresina toroensis* sp. nov. (pl. XIV, figs. 54, 55).

Found most commonly in the Mpanga Forest, Toro District of Uganda, by Dr. Neave.

Allied to *corynetes* Gr.-Sm. Vein 6 of the fore wing much nearer to the cell than in *corynetes*.

♂. Similar to *corynetes* but the patch on the hind wing only reaches vein 4. Underside as in ♀ but wholly earthy-brown.

♀. Upperside with black ground-colour. Fore wing with a rounded orange patch on the inner margin, reaching vein 4 and not reaching base nor outer angle, and filling up the bases of cellules 2 and 3. Slight greyish costal scaling as in *corynetes*. Fringes too worn for description. Hind wing with orange area as in *corynetes*, but diffused over the inner margin.

Underside greyish-brown finely dusted with black. Fore wing with the orange patch showing through, some greyish-white costal scaling and submarginal black strigae. A black discocellular streak; two black postdiscal spots in 4 and 5, the lower placed more distal; two black postdiscal spots in 2 and 3, one below the other. Hind wing with a black subbasal spot in 7 and an angled spot beyond it; a black discocellular line; a spot below origin of vein 2; a curved series of five postdiscal spots in 1c, 2, 4, 5 and 6; two indistinct submarginal lines.

Antennae black ringed with white. Palpi black, white below. Head black, frons edged with white. Thorax black above, greyish below. Legs black banded with white. Abdomen black above, ventral surface grey-brown. (♀).

Habitat.—Ituri Forest, N.W. Beni, January, 1920, one ♀ (type).

In British Museum from Entebbe, January, 1913, ♂ ♀; Mpanga Forest, Toro, 4,800 feet 13—23, xi. 1913, seventeen ♂♂ four ♀♀; S.E. Ankole, 4,400-4,800 feet, October, one ♂ three ♀♀.—All collected by S. A. Neave.

54. *Epitola ammon* sp. nov. (pl. XIV, figs. 60, 61).

Allied to *ceraunia* Hew., but the female is distinguished by its smaller size, hind wing without blue scaling, and fore wing with only a streak of blue in the submedian interspace.

♀. Upperside black-brown. Fore wing with a white spot at end of cell and another outside the cell in 4; a curved postdiscal series of white spots in 2—6, the one in 2 the larger, the one in 4 the smaller; a pale blue basal streak on the submedian fold. Hind wing unicolorous, paler in the discal area, with a few scattered pale blue scales.

Underside pattern similar to *ceraunia* but with darker ground-colour. Fore wing with smaller spots than in *ceraunia*, apical scaling grey-white. Hind wing with markings grey-white, postdiscal band not sharply defined, narrower than in *ceraunia* and inner edge more proximal, forming a streak along lower edge of cell but not touching the cell above vein 3, the elongate spot in 5 separated from the lower part by vein 5; marginal spot in 6 well defined, and between this and vein 8 the fringe is grey-white. A grey-white marginal patch in 3 and 4, slightly connected with postdiscal band.

Fore wing shorter and more pointed at the apex than in *ceraunia*. Hind wing shorter and with a slight anal lobe.

Length of fore wing: 19 mm.

Habitat.—Penghe, North bank Ituri River, March, 1920, one ♀, T. A. Barns. Collected in dense forest.

55. *Epitola viridana* sp. nov. (pl. XIV, figs. 58, 59).

Allied to *pinodes* Druce, and to *mus* Suffert, but distinguished by the green markings.

♂. Upperside with black-brown ground-colour, and dull green markings. Fore wing with some green scaling at base of cell, in the middle, and at the end. Some scattered green scaling below cell at base, a triangular spot below vein 2, a square spot above it placed more dista, scattered green scales in 3—5. Hind wing with scattered green scaling in the cell and in cellules 1c, 2—5.

Underside pale fuscous-brown. Fore wing black from base to the first submarginal line, and between veins 2 and 5, shading into the ground-colour. Inner margin fuscous-grey, a pale spot in 1b, terminating the postdiscal line. A pale postdiscal line from costa to vein 2, interrupted by the veins and outwardly curved. A pale submarginal line, slightly waved, from costa to margin at vein 2. A second thinner submarginal line from near apex to margin at vein 2 where it joins the first. Hind wing with markings a little paler than the ground-colour. A curved basal line, a thin indistinct discal line approximating to the basal line anteriorly and posteriorly, a curved and strongly waved postdiscal line, a crenulate submedian line at the same distance from the postdiscal line as that is from the discal one, a fine slightly crenulate antemarginal line.

Length of fore wing: 16 mm.

Habitat.—South side Ituri River, five days west of Irumu, March, 1920, one ♂, T. A. Barns.

56. *Epitola marginata*, Kirby, ♀ (pl. XIV, figs. 56, 57).

E. marginata, Kirby, Ann. Nat. Hist. (5) 19, p. 443 (1887) (Cameroons). ♂. Smith and Kirby, Rhop. Exot. 7, Lyc. Afr., p. 27, pl. 7, figs. 5, 6 (1889) ♂.

Aurivillius in his Rhop. Aeth., p. 293, places *versicolor* Kirby as the ♀ of this species. The type ♀ is in the Joicey collection and does not agree with *marginata* in the markings below. This ♀ agrees very well below with *cercene* Hew.

The "♂" of *versicolor*, which is a ♀, agrees best with *uniformis* Kirby in the markings below, the so-called ♀ of that species being evidently a ♂ with a paler coloration.

If these suggestions should be confirmed by the study of larger material or by other means, the name *uniformis* would sink to *versicolor*.

The ♀ which we assign to *marginata* is very similar to the ♀ we have placed with *uniformis*, i.e., the ♀ figured by Smith and Kirby as the ♂ of *versicolor*. The blue on the hind wing is more extended and there is a distinct white spot at its distal edge between veins 4 and 6.

On the underside the submarginal lines are strongly crenulate as in the ♂, the one nearest the margin being further from it than in *uniformis*. The hind wing markings are as in the ♂. The ground-colour is grey-brown, but paler than in the ♀ of *uniformis*.

Length of fore wing: 19 mm.

Type from Albertville, S. E. Congo, June, 1920, T. A. Barns, 1 ♀.

E. versicolor, Kirby, A.M.N.H. (5) 19, p. 444 (1887) (Cameroons). Rhop. Ex. Afr. Lyc., p. 28, pl. 7, figs. 9, 10 (1889).

E. uniformis Kirby, l.c. p. 445 (1887) (Cameroons). Rhop. Ex. 1. Afr. Lyc., p. 29, pl. 7, figs. 11, 12 (1889).

E. cercene Hew., Ent. Mo. Mag. 10, p. 150 (1873) (Cameroons) ♂. Ill. Diurn. Lep., Supp. p. 20, pl. 1b., figs. 19, 20 (1878), ♂.

57. *Epitola iturina* sp. nov. (pl. XIV, fig. 62).

Allied to *dorothea* B.-Bkr., but has still more extended blue and different markings below.

♂. Upperside of fore wing with blue area reaching close to margin between a point midway between veins 2 and 3 and the outer angle. Hind wing as in *dorothea* with some blue scaling in lower distal part of cellule 6.

Underside more like that of *carcina* Hew. Fore wing with the second submarginal grey band farther from the submarginal line and broader, especially the spots in 2 and 3, which are somewhat quadrate, Hind wing with the grey discal band broader than in *carcina* and farther from the submarginal line.

Length of fore wing: 20 mm.

Habitat.—Forest between Ituri and Lindi Rivers, S.W. of Avakubi, April, 1920, one ♂. Taken on an oil-palm.

58. *Epitola urania tanganyikensis* subsp. nov. (pl. XIV, fig. 63).

♂. Upperside with extended black area. Fore wing with blue area 4 and 5 less produced than in 2 and 6; outer edge of blue area from vein 3 to submedian fairly straight; basal area of cellules 6, 3 and 9 not blue, forming a costal indentation of ground-colour. Hind wing with the marginal black border broader than in typical form.

Underside resembles that of the typical ♀ in the golden coloration of apex of fore wing and of the hind wing. Markings very similar, but the grey discal spots on the fore wing are obsolete in 2 and 3, the subapical ones being reduced.

Habitat.—Albertville, Tanganyika, June, 1919, three ♂♂.

59. *Hewitsonia kirbyi* Dew. ♀ form *intermedia* form. nov. (pl. XV, fig. 65).

♀. Upperside differs from *kirbyi* ♀ in the absence of the spot in 2 on the fore wing. Differs from *similis* in the absence or only slight indication of the spot in 1b on the fore wing. The hind wing is either wholly brown or with a white distal area.

Underside more resembles *kirbyi* in the darker and more deeply yellow markings on the hind wing. On the fore wing resembling *similis*.

Habitat.—Ituri District, N.W. Beni, January, one ♀ (type); Ituri Forest, thirty miles S. of Irumu, bordering long-grass country, February, one ♀, T. A. Barns; Mabera Forest, Kyagive, Mulanga, Uganda, 4,000 feet. R. A. Dummer, one ♀; Cameroons, *ex* collection, Grose-Smith, one ♀.

Mr. Barns records that the first specimen was taken at 2 p.m., resting on a dry twig at right angles, with wings folded; closely resembles a dry leaf. Inconspicuous on the wing.

As the genitalia of *kirbyi* Dew. and *similis* Auriv. exhibit no difference, and the difference in markings between the ♂♂ of these forms

is slight, we may infer that whilst the ♀ of *similis* has diverged definitely from the ♀ of *kirbyi*, the ♂ has only slightly diverged, and is probably only an individual aberration.

These forms are not confined to any one season. The distribution is as follows:—

1. *f. kirbyi*.—Gaboon, Cameroons, Angola, Kassai River, French Congo.

2. *f. similis*.—Gaboon, Cameroons, Upper Kassai, Longji.

3. *f. intermedia*.—Cameroons, Ituri Forest, Uganda.

60. *Hewitsonia bitjeana* B.-Bkr.

H. kirbyi bitjeana Bethune-Baker, Ann. Mag. N. H. (8), 16, p. 190 (1915).

H. beryllina Schultze, Archiv f. Naturges., 81 Jahr., Ab. A., p. 163 (1915) (pub. 1916).

Mr. Bethune-Baker, *loc. cit.*, thought that this might be the wet season form of *kirbyi*, but Schultze, *loc. cit.*, mentions that his *beryllina* was taken at the end of the rainy season, and that *boisduvali*, *kirbyi*, and *similis* were flying at the same time. Furthermore we have ♀ ♀ of *kirbyi* from the Cameroons taken at the same time as *bitjeana* ♀ ♀.

The genitalia of *bitjeana* show an important difference from those of *kirbyi* in the shape of the sickle-like process arising from the base of the uncus and surrounding the anal tube (pl. VIII, fig. 3).

Upon these considerations we must treat *bitjeana* as a distinct species.

61. *Epitola posthumus* Fbr., and *urania* Kirby.

We have examined the genitalia of these forms and there is no doubt but that they are distinct species.

The differences in the genital armature will be apparent upon reference to the drawings on plate VIII. It will be noticed that there are differences in the shape of the uncus, in the shape of the sickle-like process arising at the base of the uncus, in the shape of the strongly-chitinized process arising from the juxta (penis sheath and penis of some authors), and the formation of the two processes arising from this organ.

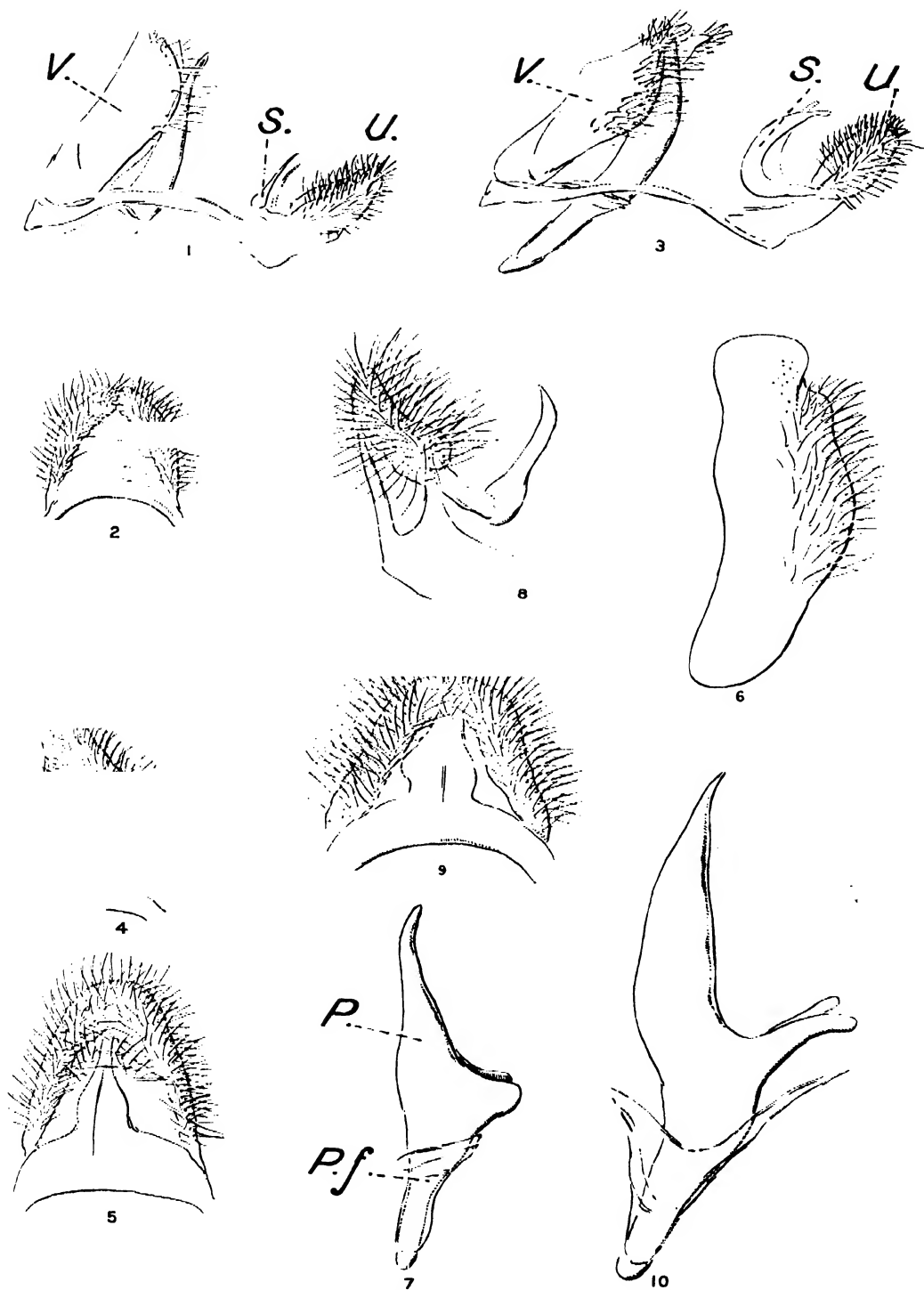
62. *Hewitsonia boisduvali congoensis* subsp. nov. (pl. XIV, fig. 64).

The typical form occurs in the Cameroons, French Congo, Sierra Leone, and Gold Coast.

EXPLANATION OF PLATE VIII.

- Fig. 1. *H. similis*, lateral view.
2. „ uncus, dorsally.
3. *H. bitjeana*, lateral view.
4. *E. posthumus*, uncus and its appendage (scaphium).
5. „ uncus, dorsally.
6. „ valve, laterally and externally.
7. „ penis, and penis funnel.
8. *E. urania*, uncus, and its appendage (scaphium).
9. „ uncus, dorsally.
10. „ penis and penis funnel.

P. = Penis. PF. = Penis Funnel. S. = Scaphium. U. = Uncus. V. = Valve.



GENITALIA OF AFRICAN LYCÆNIDÆ.

The eastern race is characterized by increased blue and narrower subapical band.

♂. Upperside of fore wing with subapical band narrower than in typical form. Occasionally narrow-banded specimens occur with the typical form. The blue area extends almost or quite to base of cellule 2, and touches the cell below vein 2. Hind wing with blue extending into the cell, almost filling it with thin scaling, and not reaching the base; a discocellular mark of dark ground-colour.

Underside with no constant differences.

♀. Fore wing with narrower band, of which the lower spot in cellule 4 reaches nearly to margin. The patch at the outer angle is reduced proximally.

Habitat.—Itoa River, Ituri Forest, January, 1920, one ♂ (type); Upper Kasai District, Congo Belge, 6 ♂ ♂ one ♀ (*ex-collection* H. H. Druce.)

63. *Hypokopelates ituri* B.-Bkr. f. *lineosa* form. nov.

Distinguished from typical specimens of *ituri* by the much thinner and paler discal lines below, by the absence of any brown distal suffusion, and by the more grey-white ground-colour.

The upperside is not different from the typical form.

As the markings are exactly similar to those in *ituri* we can only regard this as an aberration.

Habitat.—Between Lindi and Lubila Rivers, north of Batama, April, 1920, two ♂ ♂; Lindi River, Lubila Valley, twenty miles north of Batama, April, 1920, one ♂ (type); Lindi River (open forest), north side near Bafwasende, April, 1920, one ♂; forest on watershed of Ituri and Lindi Rivers, S.W. of Avakubi, April, 1920, one ♂; Avakubi, Ituri River, April, 1920, two ♂ ♂; forest between Epulu and Ituri Rivers, one ♂; E. Epulu River, N. Ituri Valley, between Penghe and Irumu, March, 1920, one ♂, T. A. Barns.

The following series of *ituri* was also taken:—

Forest between Epulu and Ituri Rivers, March, 1920, one ♂; between Epulu and Duye Rivers, North Ituri Valley, March, 1920, one ♂; East Epulu River, North Ituri Valley, between Penghe and Irumu, March, one ♂; Ituri River, Ituri Forest, January, 1920, one ♂; Ituri River, three days' west of Irumu, March, 1920, one ♂; Ituri River, five days' west of Irumu, March, 1920, one ♂; near Bafwaboli, Tshopo River, April, 1920, one ♂; Tshopo Valley, near Batama, April, 1920, one ♂; north side Maiko Valley, near Stanleyville, May, 1920, one ♂ one ♀, T. A. Barns.

Both series of forms show variation in the extent of blue on the fore wing, but the tendency is to a wider black margin. This form is doubtless only a race of *eleala* Hew., which, however, may prove equally variable were a good series obtained.

64. *Hypokopelates canescens* sp. nov. (pl. XV, figs. 72, 73).

Allied to *obscura* B.-Bkr. T. E. Soc. 1913, p. 501. Distinguished by its grey-brown upperside.

♂. Upperside grey-brown with some scattered blue scales. Fore wing with black fringes. Hind wing with white fringes; anal lobe with orange spot and some metallic blue scales.

Underside white. Fore wing with post-discal narrow orange stripe, edged with black. A grey submarginal line, indistinct anteriorly. Some pale grey apical suffusion. Hind wing with narrow orange post-discal stripe edged with black, shaped as a distinct W between veins 1a and 3; a grey submarginal crenulate line from vein 7 to 1b, and beyond it a grey marginal band not touching the margin; a quadrate orange marginal spot in 2, bearing a large rounded black spot; anal lobe black edged with orange behind; outer marginal edge finely black fringes white.

Antennae black, ringed with white. Palpi black above, white below. Head black, frons white in the centre. Thorax black above, white below. Legs white banded with grey. Abdomen black above, ventral surface grey-white, segments 5—9 banded with white laterally.

Length of fore wing, 14 mm.

Habitat.—Albertville, Tanganyika, June, 1919, one ♂.

65. *Tanuetheira prometheus congoensis* subsp. nov. (pl. XV, fig. 74).

Described from a single ♀ which is sufficiently different to deserve a name.

♀. Upperside with the blue colour not greenish as in typical form. Hind wing with the white postdiscal spot in 3 well-developed and some white scaling above it in 4. Broader extent of distal black from anal angle to vein 3, white marginal bars thinner.

Underside of fore wing without grey apical suffusion; a second submarginal line faintly marked. Hind wing with submarginal line farther from the margin; red anal area reduced and not touching post-discal line.

Habitat.—Albertville, Tanganyika, June, 1919, one ♀.

66. *Argiolaus silarus iturensis* subsp. nov.

Distinguished by the narrower dark margin on the hind wing and smaller red anal spots; on the underside by the distinct and yellow postdiscal lines.

♀. Upperside of fore wing as in typical form but without white discal scaling. Hind wing with narrower dark outer margin, extended blue, and the postdiscal spots smaller and more broadly bordered with blue outwardly. The two red anal spots much smaller.

Underside of fore wing with thin yellow postdiscal line, slightly curved. Hind wing with yellow postdiscal line thicker than on fore wing, straight from costa to the red spot in 2, thence to the anal spot, which is edged with black on the side of the lobe.

Habitat.—Forest on watershed of Ituri and Lindi Rivers, S. W. of Avakubi, April, 1920, T. A. Barns, one ♀.

67. *Epamera fuscomarginata* sp. nov. (pl. XV, figs. 70, 71).

Allied to *sappirus* Druce, and agrees with this species in possessing a buff-coloured patch of scales on the costal area of the hind wing above.

♂. Upperside of fore wing with pale-blue basal area of same shade as *sappirus*, outer edge nearly straight, not entering cellule 3, and angled along submedian. Hind wing as in *sappirus* but without a black anal spot in 1c, and with paler inner margin.

Underside with broad postdiscal bands placed as in other forms. Fore wing with distal area from costa to vein 2 fuscous-brown, leaving a square white marginal patch in 3 and 4, bounded by the submarginal line. A broad tuft of black hair arising on the edge of the inner margin. Hind wing with fuscous-brown apical patch from vein 8 to 5. Postdiscal band broader than on fore wing, orange-yellow, darker anteriorly, edged with fuscous on the inside, not interrupted, and bearing a thin line of metallic-blue scales from vein 4 to the submedian, and a similar line edged with white from below submedian to inner margin. A black spot in 2 lying mostly in the orange-yellow band. Anal spot as in *sappirus*. The inner edge of the postdiscal band on both wings is much more proximal than the line in *sappirus* or in any other species we have seen.

Length of fore wing: 18 mm.

Habitat.—Bafwaboli, Tshopo River, April, 1920, one ♂, T. A. Barns, "Taken in dense forest undergrowth."

68. *Epamera barnsi* sp. nov. (pl. XV, fig. 66, 67).

Allied to *mirabilis* Druce, Ann. Mag. Nat. Hist. (7) xi, p. 71 (Sierra Leone (1903). Distinguished by the glossy costal area of the hind wing extended to the black marginal patch.

♂. Upperside of fore wing as in *mirabilis*, the blue area being paler. Inner margin fringed with white hair. Hind wing of same blue colour as on fore wing. The glossy-grey costal area touches the lower margin of cell and extends to an anterior black marginal patch which is placed as in *mirabilis*, but in this species the black patch is divided from the glossy area by the blue ground-colour. Inner margin grey, blackish-brown at the anal angle. A black anal spot edged with metallic-green outwardly, and with an orange-red spot above it. A white submarginal line from vein 2 to the anal spot.

Underside chalky-white and somewhat differently marked to *mirabilis*. Fore wing with a postdiscal slightly curved thick brown line from costa to vein 2. Distal area suffused with grey-brown, and midway between the thick line and the margin is a thin line more strongly curved, reaching vein 2. Posterior area below vein 2 glossy, and with a narrow stripe of androconia along the submedian and a darker grey and similar but broader stripe at the base below the submedian.

Hind wing with a brown postdiscal line almost straight, interrupted at vein 2, posteriorly curved to 1b and bent upwards to the inner margin. A thinner and slightly curved irregular submarginal line reaching vein 3; a thicker admarginal line from vein 7 to 3. A quadrate orange-red spot in 2, its inner edge interrupting the postdiscal line, and with a black spot on its outer half. A thick line of similar colour runs from the lower outer edge of the large spot to a large orange-red anal spot, and is bent at the submedian slightly upwards to the inner margin. A black anal spot as in *mirabilis*, its upper edge entering the orange-red spot; some metallic-blue scales along the outer edge of the orange band, and some blackish dusting between the anal spot and vein 2.

Length of fore wing: 17 mm.

Habitat.—Bafwaboli, Tshopo River, April, 1920, one ♂, T. A. Barns.

69. *Epamera frater* sp. nov. (pl. XV, figs. 68, 69).

Closely allied to *barnsi* and *mirabilis* Druce. Distinguished from both by possessing the hair tuft on the fore wing below, characteristic of other *Epamera*.

♂. Upperside of fore wing with pale-blue area as in *barnsi*, but the outer edge of this area is angled at the submedian. Hind wing as in *barnsi* except that the speculum extends to the margin at vein 6, and above and below this vein is separated from the margin by a narrow area of black scaling. The lower edge of the speculum is straight, whereas in *barnsi* the blue area curves into it at the black anterior patch. Between veins 7 and 8 there is a large round patch of modified scales of a buff colour, and at the lower edge of this patch are similar scales of a blackish-brown colour which extend to form a patch between veins 7 and 6. The costa is strongly lobed.

Underside of same pattern as in *barnsi*. Fore wing with a short discocellular streak, postdiscal and submarginal lines thinner than in *barnsi*, and with less grey-black apical suffusion. A tuft of long grey hair on the inner edge. The lower edge of cell is strongly curved. The glossy area is more vitreous than in *barnsi* and has a silvery lustre; it may properly be termed a speculum.

Hind wing with thinner lines than in *barnsi* and a smaller black spot in the red spot in 2.

Length of fore wing: 16 mm.

Habitat.—Between Lindi and Lubila Rivers, N. of Batama, April, 1920, 3 ♂♂, T. A. Barns.

70. *Hypolycaena burtoni puella* subsp. nov. (pl. XV, figs. 75, 76).

Distinguished by the sharply defined edge of the white band on the fore wing. ♂ not known.

♀. Upperside markings much as in the type form. Fore wing with sharply defined outer edge to the white band, which is angled outwardly at veins 4 and 2; this band not invaded by ground-colour. Hind wing with the narrow white submarginal band indistinct or obsolete.

Underside markings similar to type form. Fore wing with thick orange transverse cell-stripe from just before origin of vein 2 to the costa. Postdiscal stripe thicker and more irregular than in type-form. Hind wing with a short sub-basal bar in cellule 7, which in the type-form is represented by a dot. Postdiscal line heavier, straight and much more oblique, from a point on vein 8 more proximal than in type form; from vein 2 this line is black, half as thick, more distally curved, and reaches a point farther along the inner margin. A submarginal line of dark grey.

Length of fore wing { 19 mm. (Specimen from Kivu.)
20 mm. (Specimen from Ruwenzori.)

Habitat.—Ruwenzori, Western slope, 2,500 m. December, 1919, one ♀ (type); Kisaba Forest, Ruanda, E. Lake Kivu, September, 1919, one ♀.

The specimen from Ruwenzori is larger and more strongly marked than the other.

71. *Hypolycaena japhusa* Riley (pl. XV, figs. 77, 78 ♂).

We take the opportunity of figuring the ♂ of this form. This specimen was lent to Mr. Riley to describe with his ♀ from the Dollman collection. See Index for reference.

72. *Zeltus antifaunus latimacula* subsp. nov. (pl. XV, figs. 79, 81, ♂, 80 ♀).

Distinguished by the larger white spots on the hind wing in both sexes.

♂. Upperside of fore wing as in *antifaunus* D. and H. Hind wing with two distinct submarginal spots. Postdiscal spots larger, often a second spot or traces of one in cellule 4. White anal spot larger.

Underside of fore wing without grey apical suffusion. Postdiscal stripe more oblique. Hind wing with smaller black marginal spot in 2.

♀. Upperside of fore wing with faintly blue basal area, outwardly diffused and enclosing a curved black postdiscal line; outside postdiscal line a white spot below vein 2 and some whitish scaling above it. Hind wing with a thinner postdiscal line, darker basal area, and larger white spots. Anal lobe black.

Underside as in male.

Habitat.—Lumpungu River, Malagarassi Valley, Urindi District, July, 1919, one ♂ (type); Lake Tshohoa, Ruanda District, August, 1919, 4 ♂♂, one ♀ (♀ allotype); Akanjaru River, Ruanda District, August, 1919, one ♀; Ruindi Plains, S. end Lake Edward, November, 1919, one ♀, coll. T. A. Barns. Also in Joicey collection, from Fort Jameson, N. Rhodesia, one ♂; Toro, Uganda, February, 2 ♂♂; Mabera Forest, Uganda, Jackson, 1906, one ♂; Entebbe, Uganda, 1901, A. H. Neumann, one ♂; Entebbe, one ♂; Uganda, 2 ♂♂.

The Uganda specimens, with one exception (Toro), only show two white postdiscal spots on the hind wing.

73. *Cupidesthes cuprifascia* sp. nov.

Distinguished by its coppery markings above.

♂. Upperside with black ground-colour. Fore wing with cupreous orange median band placed obliquely below vein 2—its lower edge along the inner margin, its upper edge along lower margin of cell, its distal edge even and reaching tornus, its proximal edge even and sub-basal. Hind wing with lower distal half of same colour as fore-wing band, embracing an area from inner margin to vein 6 and extending into end of cell.

Underside dark grey with bands formed of white lines edged on the inner side with dark brown. Fore wing with discal band from vein 6 to inner margin, its proximal edge angled at vein 3, with anterior part along discocellular and posterior part from veins 3 to origin of 2 and thence to margin. A postdiscal band of five spots, those in 4-6 narrowing anteriorly, the two in 2 and 3 larger, more proximal, and coincident with discal spots. A greyish-white marginal band enclosing a thin brown submarginal line.

Hind wing with a small black subbasal spot in 7. An irregular discal band from vein 6 to inner margin. A rounded black spot on inner margin between base and discal band. A curved post-discal band of seven spots from costa to inner margin, the spots smaller than those of the discal band. Greyish-white marginal band enclosing the brown submarginal line. Two or three small orange anal spots, edged with black distally and bearing metallic-blue scales. This wing somewhat rubbed and markings not too clear.

Length of fore wing: 13 mm.

Habitat.—Bafwasende, Upper Congo, April, 1920. In dense forest one ♂.

74. *Cupidesthes minor* sp. nov. (pl. XV, figs. 82, 83).

Distinguished by its very small size.

♀. Upperside black-brown. Fore wing with pale blue basal area, extending into lower part of cell and into base of cellule 2. Hind wing with pale blue basal area forming a cell-stripe to beyond cell, and a faint stripe in 1c. A white submarginal line between submedian and vein 6, interrupted in 2 by the orange border to the black submarginal spot. A fine white marginal line. Fringes of both wings grey.

Underside grey-white with spots defined by grey-brown and white edging. Fore wing with a spot closing the cell; a postdiscal series of

six spots in 2-8, the anterior one minute, the outer edge of the lower two shifted in; a spot between 2 and the submedian, more proximal than the postdiscal series; a grey submarginal and a broader grey marginal line. Hind wing with a spot closing the cell; three confluent discal spots between 3 and the inner margin, the inner edge angled at submedian; a postdiscal series of six spots in 2-7—the two in 4 and 5 more distal than the others; a grey submarginal line and a darker marginal one, both interrupted by the orange-bordered black spot in 2; a small orange anal spot with black centre.

Length of fore wing: 10 mm.

Habitat.—Avakubi, Ituri River, April, 1920, one ♀, T. A. Barns.

Seen flying high over shrubs and trees, and feeding on plant-juices.

75. *Lycaenesthes discimacula* sp. nov. (pl. XVI, figs. 87, 88).

Allied to *mahota* Gr.-Sm. but distinguished by a smaller patch on the fore wing and the hind wing bearing only a small discal spot.

♂. Upperside with black ground-colour. Fore wing patch smaller than in *mahota*, reduced distally, especially in 4 and 5, forming a small anterior projection, and distally rounded. Hind wing with a small somewhat triangular cupreous discal spot in cellules 2-4. A small marginal spot in 2, thinly outlined proximally as in allied forms.

Underside with black-brown ground-colour and with thinner lines than the allied form. There are eight lines on each wing in most *Lycaenesthes* forms. Taking into account a certain variation existing in a series of *mahota*, the present form presents no differences worth definition on the underside, excepting the reduction of white coloration, resulting in thinner lines, and that the fourth line from the base on the fore wing, is thicker than the others.

Habitat.—Ituri Forest, N.W. Beni, January, 1920, one ♂; Ituri River, North bank, half-way between Avakubi and Penghe, May, 1920, one ♂; between Epule and Duye Rivers, N. Ituri Valley, March, 1920, one ♂ (type).

76. *Lycaenesthes bipuncta* sp. nov. (pls. XV, figs. 84, 85 ♂, XVI, 86 ♀).

Distinguished from other allied forms by the divided ochreous patch on the fore wing.

♂. Upperside black-brown. Fore wing with an ochreous patch between the submedian and vein 3; the upper edge of this patch

rounded and the part in cellule 2 dusted with black, the patch divided from vein 2 by a narrow line of ground-colour broadening at the submedian. Hind wing with dark markings faintly showing from below. An indistinct submarginal and a marginal line.

Underside black-brown, with white markings. Fore wing with a short basal costal stripe, a stripe at end of cell, notched on the lower edge, and with two white dots above it on either side, below it an oblong spot between vein 2 and submedian with a notch on its upper edge; a postdiscal line between veins 2 and 6; an oblong patch below this between 2 and the submedian; a second postdiscal line oblique from costa to vein 4, then curved down to below 3 where it joins a short thick line reaching vein 4; a subapical line between veins 9 and 5, interrupted at vein 6; a thick apical line between veins 9 and 5; a submarginal line and a thinner marginal one.

Hind wing with a white basal line; a subbasal line; a curved discal line touching a bar at end of cell; a postdiscal line, heavily marked between veins 2 and 7, curved outwardly from vein 2 and curving round the inner margin to near the discal line, where it bends sharply outward to the submedian and thence inwards to vein 2, forming a V mark; a second postdiscal line, curving to the first in cellule 5 and also at the anal angle, where it curves round to meet the discal line; a submarginal line curving sharply outward between veins 4 and 6, accentuated by a spot in 6 and heavily marked from vein 4 to 2, where it joins the postdiscal line; between the submarginal and postdiscal line two blackish spots in 4 and 5 edged with white on the outer side; two marginal lines more or less confluent; the usual anal spot and marginal spot in 2.

♀.—Upperside of fore wing with large pale ochreous patch between submedian and vein 3; invaded by ground-colour in 2 leaving a small outer spot, also below 2 with a spot of ground-colour leaving a larger distal part; a small spot in cell above base of cellule 2. Hind wing with a pale indistinct submarginal line following the one on the underside, an antemarginal line and a fine white marginal one. Some black discal spots representing those on the underside.

Underside as in the ♂ but with white markings more heavy.

Length of fore wing: ♂ ♀ 12 mm.

Habitat.—Cartouche, near Lesse, W. Semliki River, January, 1920, one ♂ (holotype); between Lindi and Lubila Rivers, north of Batama, April, 1920, one ♀ (allotype), T. A. Barns.

Collected in dense undergrowth.

77. *Triclema ituriensis*, sp. nov. (pl. XVI, figs. 89, 90).

Allied to *rufoplagata* B.-Bkr., but distinguished by the larger rufous patch on the fore wing and the differently-marked underside.

♂. Upperside blackish-brown. Fore wing with a larger rounded rufous or dark coppery patch, from 1b to vein 6, extending into end of cell and invaded by the black discocellular spot. A fine black marginal line. Hind wing with fine black marginal line and faint greyish submarginal line.

Underside with grey-brown ground-colour, and grey-white lines forming bands as in allied forms. Fore wing with subbasal oblique line; a discal line crossing cell and angle of vein 2; an oblong spot closing cell, divided by a grey line; a postdiscal line from costa to vein 2, where it is interrupted and continued more proximally to the submedian; close to the postdiscal line, a second line more straight from vein 4 to submedian; a third postdiscal line beginning at a point close to the first, angled outwards at vein 5 and continued to the inner margin parallel with the second; between the second and third postdiscal lines, two black spots in 2 and 3; a submarginal line from costa to vein 2, curved outwards anteriorly and posteriorly convergent to the postdiscal line; a postdiscal bar in cellules 4 and 5, bearing two black spots, its inner edge continued to the costa close to the outer discal line; a second submarginal line nearly parallel to the margin, from costa to inner margin; a thin marginal line.

Hind wing with two large black basal spots; a spot closing the cell and divided by a grey line continued to vein 2; below this, with its anterior end more proximal, is an ovate spot touching vein 2 and the submedian; a black bar from lower end of ovate spot to inner margin; outer white line of the discal spot continued to costa; a postdiscal line from costa to the inner margin, where it joins the white line bordering the black bar; a large black costal spot in 7 and a small black spot in 2; a second postdiscal line beginning close to the first, strongly curved outwards and ending at vein 3 on the first line; between these two lines 3 black spots in 3-5, the centre one much larger than the others; a submarginal line from costa to vein 2, outwardly curved; a second line close to the margin from costa to vein 3; a fine white marginal line; a black marginal spot in 2, edged with metallic blue scales and outwardly with cupreous, a smaller black double anal spot similarly marked.

Length of fore wing: 10 mm.

Habitat.—Avakubi, Ituri River, April, 1920, 5 ♂♂; Penghe, N. bank Ituri River, March, one ♂.

78. *Oboronia rutshurensis* sp. nov. (pl. XVI, fig. 96).

Allied to *plurilimbata* Karsch, but distinguished from all known forms by the blue basal area on the fore wing and the black veins of the hind wing.

♀. Upperside white. Fore wing with broad distal black marginal area, basal area pale blue to vein 2, its edge at right angles to inner margin; costa more or less narrowly brown. Hind wing with veins brownish-black. Cellules 1a, 1b, and 7 dusted with grey. A small black distal spot in 7, a large brownish-black marginal patch in 6, a postdiscal line of four spots in 2—5, the spots in 2 and 3 more proximal than the others. A blackish-brown marginal border bearing five proximally rounded spots faintly outlined with white. Some greyish dusting at base of cell and in distal part of cellules 2 and 3.

Underside white, with markings very similar to those of *plurilimbata*. Fore wing with a thin postdiscal line of six short pale-brown streaks, nearly parallel with outer margin. A submarginal thin pale brown line parallel with margin, and interrupted by the veins, a second similar line nearer the margin; but more widely interrupted at the veins, a fine brownish-black marginal line. Fringes white, greyish anteriorly. Hind wing with two black subbasal spots in 7 and in the cell, a third and larger black discal spot in 7, a postdiscal pale brown series of spots as on upperside, but of six spots placed as in the allied species. A pale brown somewhat crenulate submarginal line. A submarginal pale brown spot in 6 followed by three pale dots in 5-3, a black spot in 2, and a black bar or double-spot in 1c.

Body and appendages coloured as in other species.

Length of forewing, 15 mm.

Habitat.—Rutshuru River, N. Kivu, November, 1919, seven ♀♀. No other species of the group was taken in this district, but three species were found in the Ituri region, and all the specimens were ♀♀.

79. *Catochrysops celacus kivuensis* subsp. nov. (pl. XVI, figs. 91, 93 ♂, 92 ♀).

Distinguished especially in the ♀ by the narrow dark distal edge of fore wing, and absence of the second discal spot on hind wing.

♂. Upperside without distinguishing differences.

Underside of fore wing with postdiscal band straighter, the three anterior spots less obliquely placed. Hind wing with anterior spot of postdiscal band placed more proximally, the spots in 3-5 placed more obliquely, and leaving a larger interspace between the band and the discal spot.

♀. Upperside of fore wing with blue area extended into cellules 7-9. Hind wing without discal spot in 4 and 5, base of 6 filled in with blue.

Underside as in the ♂.

Habitat.—Near Loya Valley, fifteen miles south of Irumu, 1,200m, February, 1920, one ♂ (type); Kissenji, Lake Kivu, September and October, 1919, one ♀ (allotype); Rutshuru River, N. Kivu, November, 1919, one ♀; Lava Plains under Niragongo Volcano, Kivu, October, 1919, one ♀; Loya Valley, twenty miles south of Irumu, February, 1920, one ♀.

Found in grassy country, and not frequent.

80. *Catochrysops kisaba* sp. nov. (pl. XVI, figs. 94, 95).

Allied to *crawshayi* Butl., P.Z.S., 1899, p. 422, and to *noquasa* Trim., which also appears to belong to this group. Distinguished from *crawshayi* by its rounded wings, and below with almost unmarked fore wing, and hind wing with a grey-white ground-colour.

♂. Wings rounded as in *noquasa*. Fringes not chequered as in *crawshayi*, but narrower and black-brown mixed with grey-white.

Upperside dark fuscous-brown without markings except a small rounded black anal spot in 2.

Underside of fore wing pale ochreous-brown. A faint grey spot in middle of cell, a spot closing the cell edged with grey, a faint marginal line interrupted by the veins. Hind wing with white ground-colour and sharply defined dark-brown markings. Basal area covered with grey hair. A basal costal spot, one below it in the cell, and another below this in 1b; a spot near middle of costa, touching cell; a large irregular spot in lower part of cell and almost touching the spot in 1b; a more or less distinctly defined patch from vein 2 to inner margin; a postdiscal band of nine spots all touching, the one in 4 projecting more distad than the others, the one in 2 more proximal than the others; three submarginal < shaped marks in 4-6, adjacent to which are three marginal spots; a rounded black marginal spot in 2, ringed with orange and more broadly so with brown; next to this last spot a

large brown one in 3; a smaller anal spot in 1c; a discocellular spot with a grey centre line.

Length of fore wing: 12 mm.

Habitat.—Kisaba Forest, E. Lake Kivu, 2200 m., September, 1919, 7 ♂♂, T. A. Barns.

HESPERIIDAE.

81. *Sarangesa pandaensis* sp. nov. (pl. XVI, fig. 97).

Allied to *maxima* Neave.

♂. Upperside black, thickly irrorated with grey-brown, and bearing spots of this colour. Wings covered with short grey hairs. Fore wing with a white cell-spot and a series of 5 postdiscal white spots in 1b, 2, 3, 6, 8. A faint grey-brown oblique discal band from costa to base. A more strongly marked postdiscal band, projecting distad in 4 and 5. A submarginal series of 8 grey-brown spots, the third and fourth from the apex almost touching the outer spots of the postdiscal band. A grey marginal line. Hind wing with grey-brown bands of spots; a subbasal of 3 spots, a discal of 4-5 spots, a postdiscal of 6 spots, a submarginal series of 7 spots, a marginal grey line.

Underside of fore wing with black ground-colour. Some orange-yellow scaling in cell and along costa, and in basal halves of cellules 4 and 5. A series of 9 orange submarginal spots placed as on upper-side. Distal area between submarginal spots and a thin black ante-marginal line dusted with orange; a grey marginal line twice the breadth of the black one before it. A white spot in upper angle of cell, and a subcostal one above it. A postdiscal series of 5 white spots as above, the one in 3 the smaller. Area from vein 2 to the inner margin dark grey, excepting where the distal orange invades cellules 1b. and 1c. A black spot from just before base of vein 2, and another below it; a grey stripe runs from the upper spot to the base, and is formed of closely appressed hair and raised scales.

Hind wing with black-brown ground-colour and bands of orange-yellow spots placed as above, the interspaces being thickly dusted with orange, less so in the outer costal area. Subbasal spots 3, the one in 7 larger; discal spots 6, the one in 4-5 quadrate, the one in 3 longer than the others; postdiscal spots 5, the one in 4-5 farther from the discal spots than are the others; marginal spots 6.

Fringes black-brown chequered with grey.

Antennae black ringed with white, base of club white. Palpi black

above, grey-white below; head black, a grey line between the antennae. Thorax and abdomen black above, dusted with grey, ochreous below, abdomen with ventro-lateral orange stripe. Legs black, marked with grey-white, and with yellowish hair.

Length of fore wing: 20 mm.

Habitat.—Panda River, Lufira Valley, May, 1919, two ♂ ♂.

82. *Celaenorrhinus mozeeki kivuensis* sp. nov.

A smaller form with broken subapical band.

♂. Upperside of fore wing with spots only faintly tinged with brown. Subapical band with only the 3 anterior spots and a streak on vein 5 present. Hind wing with smaller discal spot, a dot in the cell, and indistinct brown submarginal dots. Fringes chequered with brown at ends of veins.

Underside as above.

Length of fore wing: 16 mm.; in the smallest *mozeeki* examined 19 mm.

Habitat.—Niragongo Forest, N.E. Kivu, October, 1919, one ♂, T. A. Barns.

83. *Ceratrachia flava semlikensis* sub. sp. nov. (pl. XVI, figs. 98, 99 ♂, 100 ♀).

♂. Upperside of fore wing with black apical area reaching base of cellule 3, costa more or less scaled with black, not wholly yellow.

Underside of fore wing with broader black distal area anteriorly reaching base of vein 3.

♀ Upperside black-brown. Fore wing with 3 apical dots. Hind wing with pale yellow posterior area, leaving a broad costal and distal margin. A dark submedian streak.

Underside of fore wing black-brown, costa striped with yellow, some yellowish scaling at apex, a white dot in 6, one in 5 and one in 8 placed near margin. Inner margin grey-white. Hind wing paler yellow than in ♂ but with similar markings. Some blackish scaling along costa and outer margin.

This ♀ has not been compared with the ♀ of *flava* Hew., as we are uncertain what this is. There are four or five forms of ♀ in the Joicey collection, some being *phocion* Fbr. and others certainly *flava*, but we are unable to determine these with any certainty at present.

The ♀ here described resembles a form from the Cameroons (like the ♀ of *wollastoni* Heron above) on the underside of the hind wing, but on the upperside it resembles another Cameroons form similar to *phocion* above.

Habitat.—Lower Butahu River, Semliki Valley, December, 1919, three ♂♂ (type); Lesse, Ituri Forest, January, 1920, one ♂; Butahu River, under Ruwenzori, S. Semliki Valley, December, 1919, one ♂; W. slopes Ruwenzori 2,200 m., December, 1919, one ♀.

Found in dense forest.

EXPLANATION OF PLATES IX—XVI.

PLATE IX.

- Fig. 1. *Mylothris interposita* ♂ .
2. ,, *latimargo* ♂ .
3. ,, ,, ♀ .
4. ,, *ruandana* ♀ .
5. *Amauris egialea similis* ♂ .
6. *Acraea bettiana* ♂ .
7. ,, ,, ♂ under.
8. ,, ,, ♀ .
9. ,, *leucopyga latiapicalis* ♂ .
10. ,, *disjuncta* f. *alcipoides* ♂ .

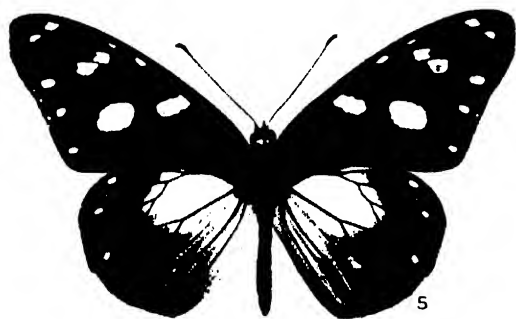
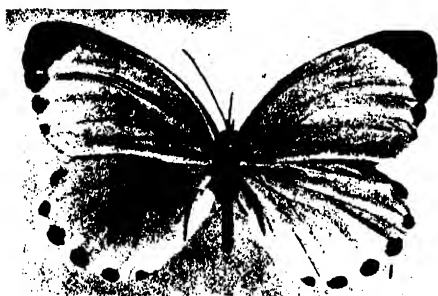


PLATE X.

11. *Acraea eltringhami* ♂ .
12. *Planema macaria hemileuca* Jord. ♂ .
13. " " " ♀ .
14. *Ergolis albifascia* ♂ .
15. " " ♂ under.
16. " *personata* ♂ .
17. *Cymothoe herminia* f. *johnstoni* Butl. ♀ .

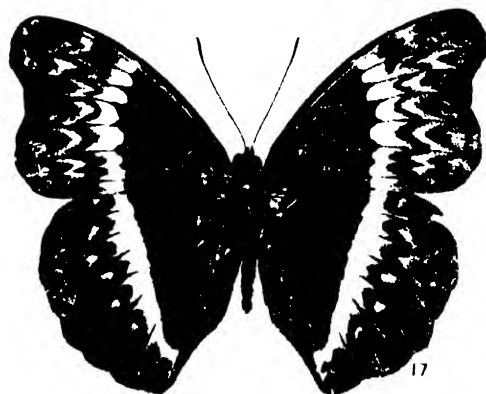
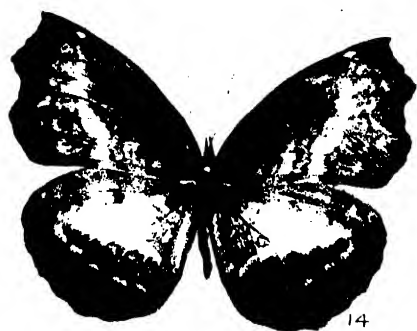


PLATE XI.

18. *Cymothoe eris* Auriv. ♀ .
19. " *reginae-elizabethae* Holl. ♂ under.
20. *Euryphura plautilla* ♀ f. *albimargo*.
21. " *porphyron congoensis* ♂ .
22. " " " ♂ under.
23. " " " ♀ .
24. " " " ♀ under.
25. *Euptera hirundo lufirensis* ♂ .
26. " " " ♀ .
27. " *semirufa* ♀ .

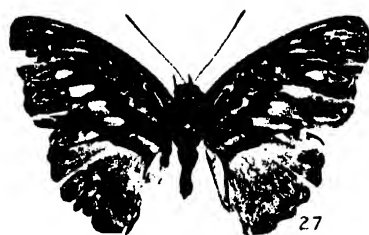
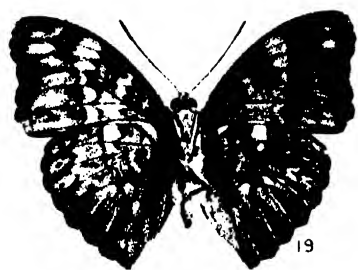
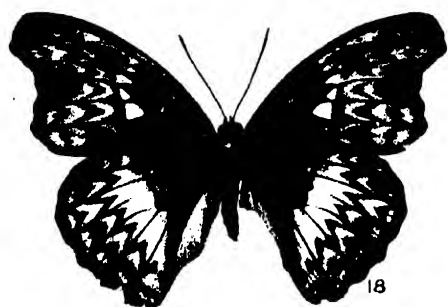


PLATE XII.

- 28. *Diestoggyna umbrina* Auriv. ♀ .
- 29. *Euryphene laetitioides* ♂ .
- 30. " " ♀ .
- 31. " *brunnescens* ♂ .
- 32. " " ♀ .
- 33. *Euphaedra ceres* f. *phosphor* ♂ .
- 34. " *eleus nigrobasalis* ♂ .

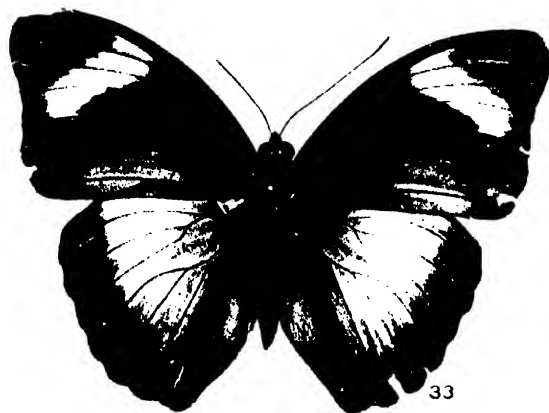
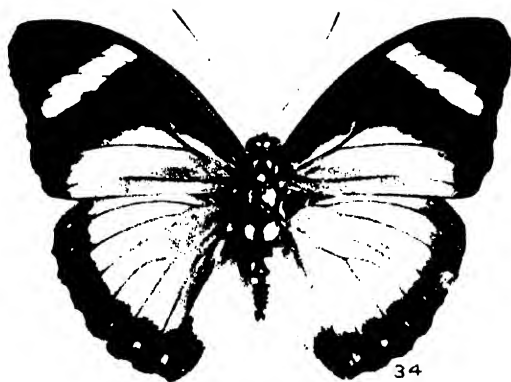
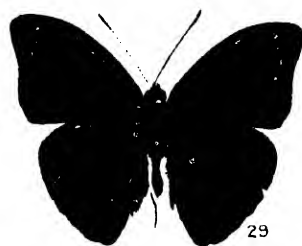
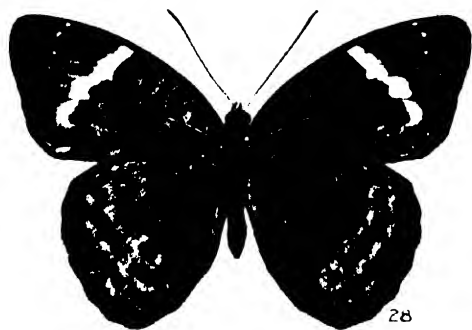


PLATE XIII.

35. *Euphaedra eleus nigrobasalis* ♀ .
36. *Euxanthe crossleyi intermedia* ♂ .
37. " " " ♀ .
38. *Mycalesis persimilis* ♂ .
39. " " ♂ under.
40. " " ♀ .
41. *Abisara barnsi* ♀ .
42. " " ♀ under.

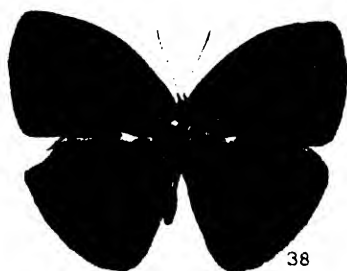
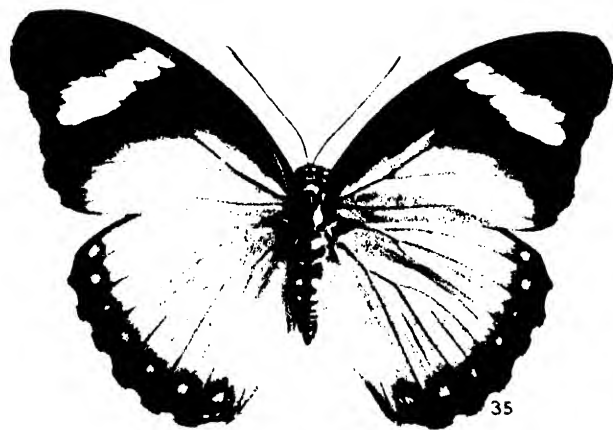


PLATE XIV.

- 43. *Telipna angustifascia* ♀ .
- 44. „ *plagiata* ♀ .
- 45. „ „ ♀ under.
- 46. „ *hollandi* ♂ .
- 47. „ „ ♂ under.
- 48. „ *subhyalina* ♀ .
- 49. *Pseuderesia neavei* ♂ .
- 50. „ „ ♂ under.
- 51. *Pentila auga congoensis* ♂ .
- 52. *Liptena ilma lathyi* ♂ .
- 53. *Citrinophila terias* ♀ .
- 54. *Eresina toroensis* ♀ .
- 55. „ „ ♀ under.
- 56. *Epitola marginata* Kirby ♀ .
- 57. „ „ ♀ under.
- 58. „ *viridana* ♂ .
- 59. „ „ ♂ under.
- 60. „ *ammon* ♀ .
- 61. „ „ ♀ under.
- 62. „ *iturina* ♂ .
- 63. „ *urania tanganikensis* ♂ .
- 64. *Hewitsonia boisduvali congoensis* ♂ .

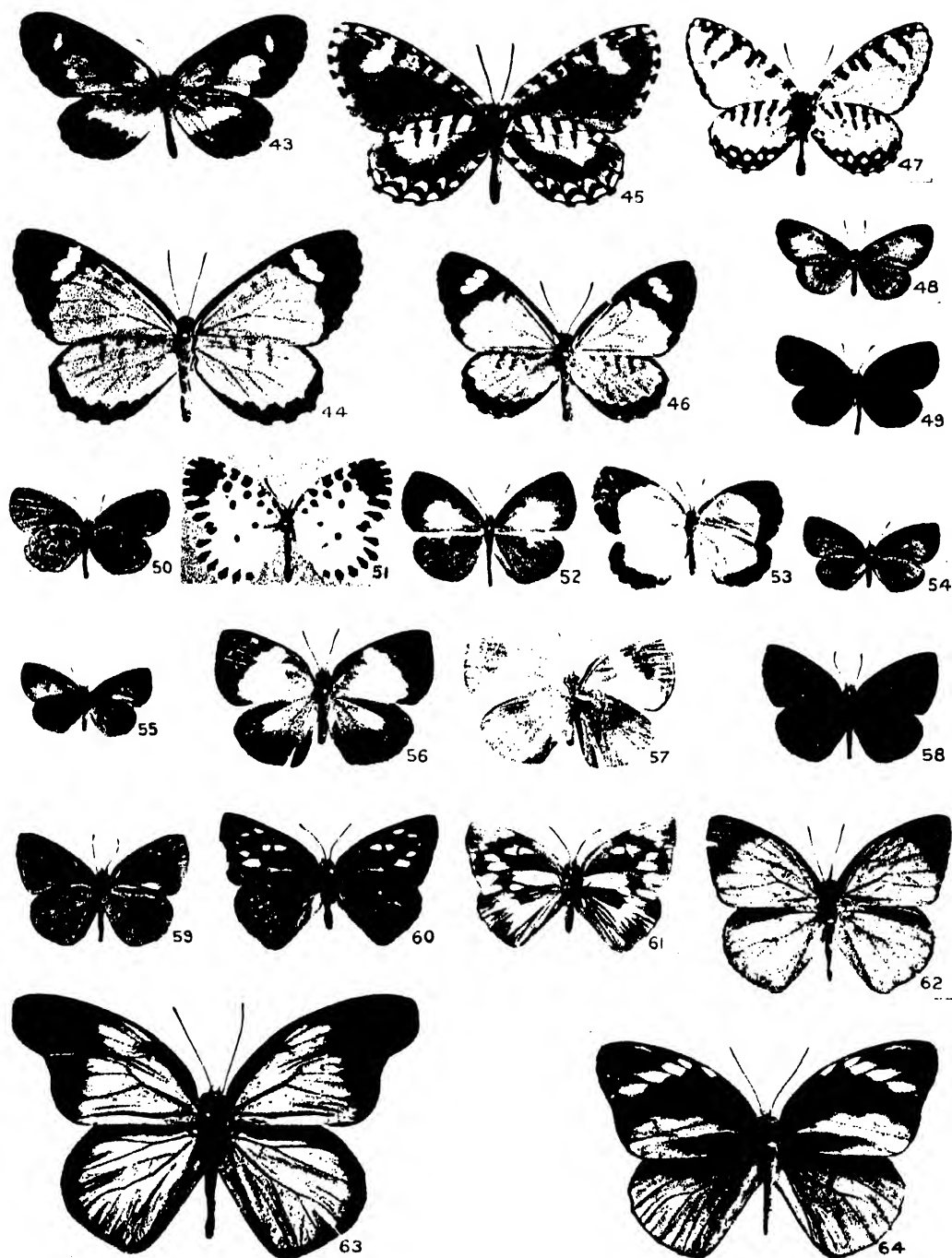


PLATE XV.

65. *Hewitsonia kirbyi* ♀ f. *intermedia*.
66. *Epamera barnsi* ♂.
67. " " ♂ under.
68. " *frater* ♂.
69. " " ♂ under.
70. " *fuscomarginata* ♂.
71. " " ♂ under.
72. *Hypokopelates canescens* ♂.
73. " " ♂ under.
74. *Tanuetheira prometheus congoensis* ♀.
75. *Hypolycaena burtoni puella* ♀.
76. " " " ♀ under.
77. " *japhusa* Riley ♂.
78. " " " ♂ under.
79. *Zeltus antifaunus latimacula* ♂.
80. " " " ♀.
81. " " " ♂ under.
82. *Cupidesthes minor* ♀.
83. " " " ♀ under.
84. *Lycanesthes bipuncta* ♂.
85. " " " ♂ under

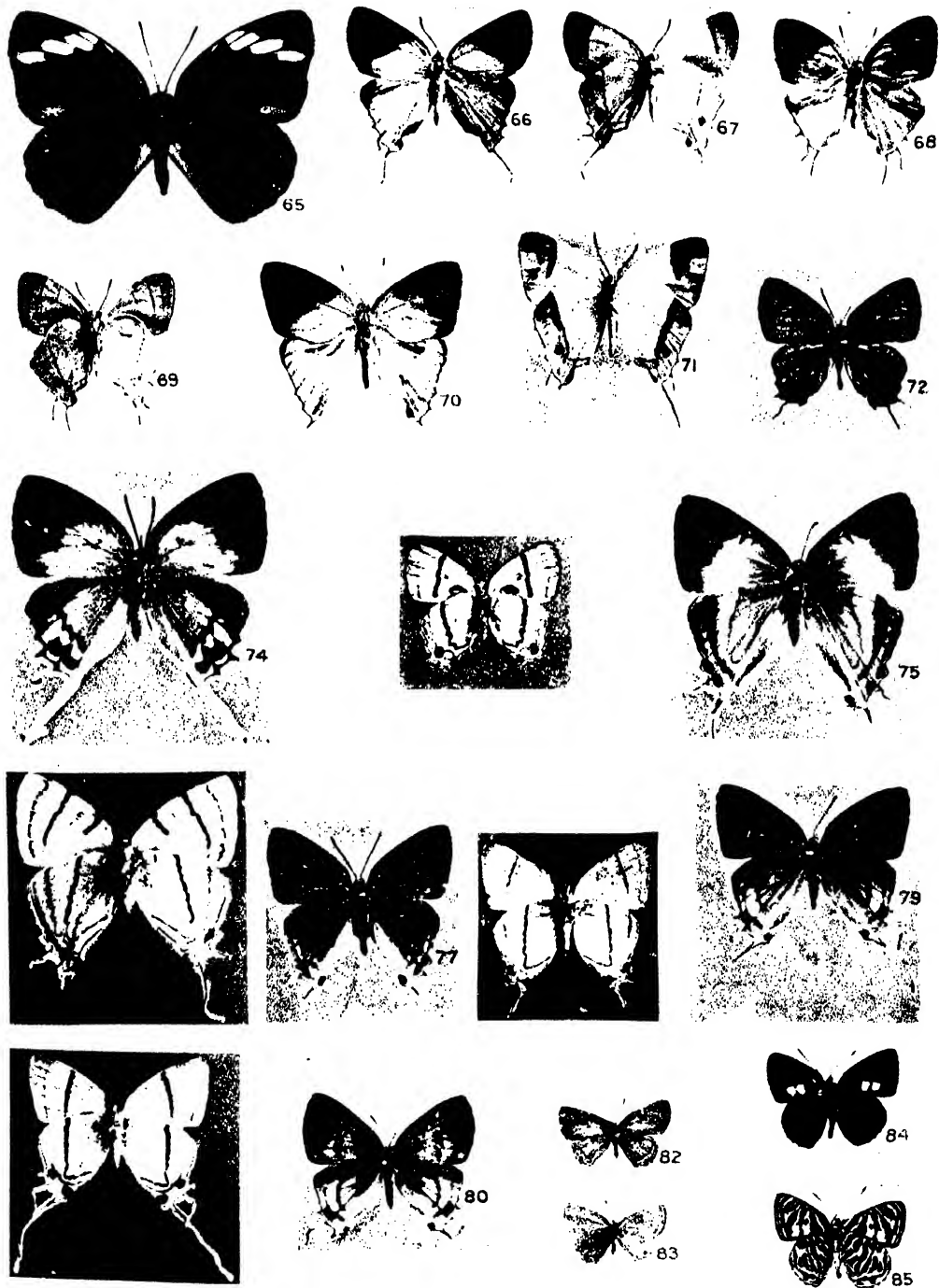
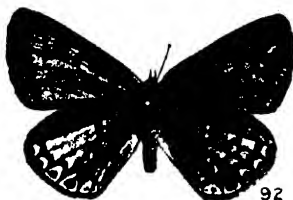


PLATE XVI.

86. *Lycaenesthes bipuncta* ♀ .
87. ,, *discimacula* ♂ .
88. ,, ,, ♂ under.
89. *Triclema ituriensis* ♂ .
90. ,, ,, ♂ under.
91. *Catochrysops celaeus kivuensis* ♂ .
92. ,, ,, ♀ .
93. ,, ,, ♂ under.
94. ,, *kisaba* ♂ .
95. ,, ,, ♂ under.
96. *Oboronia rutshurensis* ♀ .
97. *Sarangesa pandaensis* ♂ .
98. *Ceratrachia flava semlikensis* ♂ .
99. ,, ,, ♂ under.
100. ,, ,, ♀ .



ADDENDA:

P. 128. *Nagia dentiscripta*.

Hab.—Congo River below Bosoko, May, 1920, one ♀.

CORRIGENDA.

P. 120 and Index. *C. deficiens* Wlk. should read *definiens* Walk.

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III.—NEW NOCTUIDAE.

By Miss A. E. PROUT, F.E.S.

AGROTINAE.

1. *Timora joiceyi* sp. n. (pl. XVII, fig. 1).

♂, 28 mm.

Head and tegulae mauve-pink; thorax above whitish, the prothorax tinged with pink; pectus whitish; legs whitish tinged with pink, especially on tarsi; abdomen apparently whitish, but is discoloured in the single (type) specimen.

Fore wing with very acute apex, whitish at base (except at costa) and on distal area; the costa, inner margin and medial area broadly suffused with pink. Antemedial and postmedial lines of white points on the veins; the antemedial composed of spots on the three principal nervures, that on M being further from the base than the other two; the postmedial line oblique from close to apex to hind margin at about two-thirds; fringe pink.

Hind wing whitish, apparently darkened on costa and termen, but is unfortunately discoloured.

Underside of fore wing dark grey, with costa, inner margin and fringe pink. Hind wing as above, but purer white.

Congo Free State: Lufira River; near Likasi Copper Mine, 4,000 ft. (T. A. Barns); one ♂.

Seems nearest to *T. leucosticta* Hmps., from N'gamiland, but the type of *leucosticta* has a strongly-marked ochreous costal area (wanting in *joiceyi*), the postmedial spots are more irregularly placed in *leucosticta*, and the pink medial shade of *joiceyi* is almost lacking. A specimen in the British Museum from British East Africa placed under *leucosticta* is somewhat intermediate, showing more of the pink shade than in the type; but both this and the type of *leucosticta* have a less elongate fore wing than *joiceyi*.

HADENINAE.

- (2) *Craterestra sufficiens* sp. n. (pl. XVII, fig. 2).

♂, 34 mm.

Head, thorax, palpus and legs whitish, mixed with pale rufous and brown, the joints of tarsi broadly banded above with fuscous; abdomen whitish, browner beneath; antennal shaft brown.

Fore wing greyish-white, thickly irrorated with pale rufous, fuscous and tawny; some of the markings blackish; lines indistinct. A V-shaped black mark at base of fold; double subbasal, antemedial and postmedial dark dashes at costa and four white dots near apex; antemedial line double, obsolescent, nearly erect and sinuous, angled out at fold; orbicular a rather large black ring nearly uniting with the claviform, which is short and broad, defined by black; reniform defined by black except above (where it is open), figure-of-eight-shaped, with the lower circle reduced in size and interiorly shaded with grey; postmedial line scarcely double except at costa, the inner line moderately distinct, fuscous, crenulate, bent outward at costa and inward behind R^1 , angled out on R^3 , then oblique and waved, angled out on SM^2 ; subterminal line obsolescent, bent in at SC^5 , R^2 and M^2 ; a fine, black marginal line thickened into spots between the veins; fringe pale rufous mixed with grey, with a fine, pale line at base and paler shades at the veins.

Hind wing semi-hyaline white with the veins and termen slightly yellowish irrorated with fuscous; postmedial black dots on R^3 , M^1 and M^2 ; fringe white, basally tinged with yellowish and with a fuscous line near middle.

Underside of both wings whitish, the costal area (especially on fore wing) irrorated with pale rufous; a dotted postmedial line and marginal black dots; hind wing with dot at middle of discocellulars.

E. Tanganyika: Upper Ruvubu River, Urindi District, July and August, 1919 (T. A. Barns), one ♂.

Nearest to *subvelata* Wlk. and *deficiens* Wlk., but appears quite distinct.

3. *Aspidifrontia contrastata* sp. n. (pl. XVII, fig. 3).

♀, 35 mm.

Head and tegulae rufous, the tegulae with three black bands; thorax above grey mixed with brown scales; palpus, pectus and legs brown, the tarsi with the joints ringed with white; (abdomen damaged).

Fore wing silvery-grey, with the base, terminal area and reniform pale ochreous irrorated with red-brown, the costal area to near apex thickly irrorated with blackish and red-brown scales. The subbasal line represented by black streaks behind costa and M ; antemedial line black, minutely dentate, nearly erect, with slight pale proximal shade; claviform outlined in black, moderate-sized; orbicular indis-

tinged, oval, grey in centre, with red-brown annulus and defined by black; reniform with pale annulus proximally defined by red-brown and distally by blackish; a slight, dark medial shade; post-medial line double, minutely dentate, the inner line sharp and blackish, the outer greyish and diffused, angled outward at costa, excurved round cell to behind reniform, nearly erect from just behind M^2 to hind margin; the dark costal shade extending to behind cell as far as post-medial line; subterminal line red-brown, angled out on SC^5 , then dentate, with rather long teeth on R^3 and M^1 ; a red-brown shade at termen and a strong black terminal line thickened between the veins; fringe ochreous and red-brown, tipped in parts with black.

Hind wing brownish-white with the terminal line and tips of fringe fuscous.

Underside of both wings white tinged with fuscous, the interspaces paler in parts; fore wing with a few red scales towards apex, a dark postmedial bar at costa and a dark terminal line (less well defined also on hind wing); slight traces of a discal spot.

Congo Free State: Lufira River, Aff. Kikura and Buluo Rivers, near Likasi Mine, 4,000 feet, March 28, 1919. (T. A. Barns). One ♀.

4. *Diaphone barnsi* sp. n. (pl. XVII, fig. 4).

♀, 46 mm.

Head and palpus as in *eumela* Stoll; thorax above golden-yellow with a slight white band between meso- and metathorax, but not broken into six separate spots as in *eumela*; tegulae and patagia pure white; pectus with more white than in *eumela*; legs with the yellow bands broader and paler than in *eumela*; abdomen greyish-white with the segments only slightly edged with pale yellow (not strongly banded with orange, as in *eumela*).

Fore wing shining silvery-white with the terminal area slightly tinged with fuscous; subbasal line black and broad, nearly erect from costa to SM^2 ; antemedial line black and broad, nearly erect and slightly sinuous; reniform a large, diffused crimson patch, entirely without black definition; postmedial line black, of even breadth, outwardly oblique from costa at two-thirds to R^2 , bent inward to reniform about M^1 , then almost straight to hind margin; fringe yellow, entirely without the dark chequering of *eumela*.

Hind wing pure white with the veins and fringe slightly tinged with yellow.

Underside of both wings white, the fore wing with the costal and terminal areas broadly suffused with fuscous and the lines and stigma showing through from above; hind wing with a black subbasal dash at costa.

Congo Belge: Semliki River, Ruwenzori, December, 1919. (T. A. Barns). ♀—type; Tallia River, Semliki Valley, December, 1919. (T. A. Barns). One ♀.

In Cat. Lep. Phal., vol. V., p. 454, this species is cited under the name of *mossambicensis* Hopff., as a form of *eumela* Stoll., but Hopffman's figure of *mossambicensis* distinctly shows the six yellow spots on the thorax which are one of the most marked distinctions between *eumela* and *barnsi*, so that the name *mossambicensis* is evidently incorrectly employed, and this form appears to be without a name. In Coll. British Museum there are specimens of this species from N. Nigeria, Uganda, Nyassaland, and Natal: one specimen from Mozambique appears to have the fringe without dark chequering, but in other respects it agrees with *eumela*.

The points of difference between the two forms (which appear to me sufficient to establish *barnsi* as a good species) are the following: the different arrangement of the yellow hair on thorax; the generally whiter tone in *barnsi* (especially on abdomen and hind wing, which in *eumela*—♀ are strongly suffused with fuscous); the broader subbasal line; the unchequered fringe of fore wing and the very large crimson centre of reniform, which is often without any black definition and never has the strong black lunules which are often present in *eumela*.

5. *Graphania tortirena* sp. n. (pl. XVII, fig. 5).

♀, 35 mm.

Head, thorax and palpus clothed with variegated hair, white, tawny, purple and dark brown; antennal shaft brown; pectus and legs whitish, the tibiae tinged with ochreous and the tarsi with fuscous; abdomen brownish-grey with the anal tuft golden-yellow.

Fore wing greyish-white thickly irrorated with dark-brown mixed here and there with ochreous scales, paler and tinged with violet distally to the postmedial line. Subbasal line almost obsolete, appears outwardly oblique from costa to M and angled in at fold; antemedial line blackish from costa at one-third to hind margin at two-fifths, angled out in cell, at fold and behind SM²; claviform rather long, candle-shaped, pointing toward tornus, thickly black-outlined at sides and

finely towards point; orbicular paler than the wing, nearly round, greyish in centre and defined by dark shading; reniform rather narrow, defined by white (indistinctly towards costa), the distal side lunular, proximally produced along M; postmedial line separating the dark-brown and violet areas, sinuous, bent out at costa, curved round cell and gently incurved from R^3 to hind margin; subterminal line pale, sinuous, defined on each side by dentate dark marks (especially behind R^3); a slight dark terminal line, thickened between the veins; fringe white with a dark line at middle and some distal dark scales.

Hind wing grey irrorated with fuscous (especially on distal half), with a slight dark discal spot and marginal line; fringe ochreous-white with a dark line at middle.

Underside of both wings grey irrorated with brown; a little paler towards abdominal margin of hind wing; margins and fringes as above; hind wing with a slight discal spot.

Congo Belge: on Ruwenzori, Christmas, 1919. (T. A. Barns.)
One ♀.

ACRONYCTINAE.

Plusiophæa gen. n.

Proboscis fully developed; frons with a small prominence, overhung by a thick, pointed tuft of hair; eye large, round, slightly overhung by cilia; palpus moderate, upturned against frons, the second joint a little thickened with hair above and below, the third thick and blunt; ♂ antenna typically ciliate; retinaculum almost concealed by hair; thorax clothed with hair and hair-like scales; abdomen dorsally clothed with rough hair and with a moderately large crest on first segment; pectus, femora and tibiae hairy, the latter without spines, the spurs moderate, unequal, the terminal spurs of hind tibia missing (probably broken off); neuration of fore wing normal, the areole rather long; hind wing with R^2 obsolescent from middle of discocellulars; R^3 and M^1 from lower angle of cell, M^2 somewhat removed from angle; wings fairly broad, non-crenulate, fore wing with the distal margin vertical from apex to M^1 , then incurved but without any angle.

It is possible that this genus should be placed in the *Cuculliinae* rather than in the *Acronyctinae*, but as the ciliation of the eye is not strong, and there is nothing in the *Cuculliinae* to which it seems to bear any relationship, I have preferred to place it in the *Acronyctinae*. Perhaps distantly related to the American genera *Chalcopasta* and *Neumoegenia*.

The fore wing superficially recalls the genus *Plusia*; the hind wing the *Ophiderid* genus *Catephia* and allied genera.

6. *Plusiophæa metallica* sp. n. (pl. XVII, fig. 6).

♂, 30 mm.

Head, palpus above, antennal shaft and femora tawny-brown; thorax above and beneath, palpus beneath, tibiae and tarsi largely brownish-grey, the joints of tarsi tipped with white, the tegulae golden-green, some golden-green scales on thorax; abdomen grey above, tawny-brown on middle segments beneath, the crests golden-brown.

Fore wing anteriorly and proximally glossy violet-grey, with a metallic patch at base of costa; the distal half of wing largely shining, metallic golden-green. SM^2 pale from base to the edge of the metallic area; an oblique, slightly sinuous pale line from costa near base to hind margin near tornus; a slight pale line from costa to M, proximally to reniform; reniform creamy-white, broadly rectangular, slightly defined on each side by fuscous; two white lines from costa at two-thirds, obliquely curved and uniting in a streak along R^1 to near termen; a slight pale line thickened at lower angle of cell, from the areole, bordering the metallic area (which is cut off at SM^2); two gently divergent dark lines from the white streak on R^1 , the proximal one angled at fold, double and approaching the distal one at hind margin; the distal one slightly bent at fold; a white line from costa anteriorly to these; fringe whitish basally and at tip, broadly dark at middle.

Hind wing shining white with the base and the distal half glossy grey-brown (the distal border narrowing gradually to tornus); the termen (narrowly) and fringe to behind R^1 shining white; the remainder of fringe as on fore wing.

Fore wing beneath glossy grey-brown, anteriorly and distally paler, with a rather narrow white medial band and a fine white line bordering a metallic golden-green apical spot. Hind wing as above with the addition of a brown dot on discocellulars and with the distal border paler (the dark irroration more scattered) anteriorly and distally; some slight brown anterior irroration on basal half of wing.

E. Tanganyika: Upper Ruvubu River, Urindi District, July and August, 1919. (T. A. Barns.) One ♂.

CATOCALINAE.

7. *Achaea determinata* sp. n. (pl. XVII, fig. 7).

♂, 42 mm.

Head, antenna, palpus, thorax and legs pale brown, head and thorax above tinged with rufous; abdomen ochreous-white with the dorsum slightly more cinereous.

Fore wing pale brown irrorated with dull rufous (most thickly on basal third and termen) and with bright rufous (distally to the postmedial line); some fuscous irroration. Subbasal line almost obsolete; antemedial line bent out from costa at one-third to SC, then oblique to near middle of hind margin; two black reniform spots on the discocellulars; a slight waved medial line near to and nearly parallel with the postmedial; postmedial line fine, blackish, from costa at two-thirds, excurved to M² then nearly erect to hind margin at about three-quarters; subterminal line obsolescent, defined by the proximal bright rufous shade and distal dull rufous one, waved, irregular; four slight, pale spots on costa near apex; some terminal black dots and a slight, somewhat interrupted dark line on termen; the fringe grey, white and brown intermixed; a few white scales also on termen.

Hind wing ochreous-white, slightly tinged with fuscous excepting the medial and postmedial lines and the fringe; some rather darker fuscous shading proximally to the subterminal and terminal lines; a slight discal spot; terminal dots and line as on the fore wing.

Underside of both wings pale ochreous-brown irrorated with fuscous, paler before hind- and abdominal margins; a waved brown postmedial line and pale, indistinct, waved subterminal line; margins and fringes as above. Hind wing with a dark dot at middle of discocellulars; fore wing with a slight streak on discocellulars joined to a faint medial streak from costa.

"Central Africa." (T. A. Barns.) One ♂.

Nearest to *A. indeterminata* Walk., but quite distinct in the hind wing and the position and curve of the ante- and postmedial lines on the fore wing, as well as in size.

8. *Achaea tornistigma* sp. n. (pl. XVII, fig. 8).

♂, 55 mm.

Head, thorax, palpus, legs and antenna brown, the thorax above tinged with rufous, the tarsi broadly ringed with fuscous; abdomen above cinereous, browner beneath.

Fore wing pale ochreous brown largely suffused with rufous, especially basally and postmedially, the termen conspicuously pale except at apex. A black basal mark at M and black subbasal dash behind costa; antemedial line from costa at less than one-fourth, strongly bent outward to SC, then slightly incurved to near middle of hind margin; the reniform represented by three blackish dots on the discocellulars; a waved medial line, proximally defined by a paler area, from costa at middle to hind margin at about three-fifths, a little outwardly oblique to M, then slightly incurved; postmedial line stronger, more dentate, rather more irregular, close to median line but more oblique from costa SC⁵, where it is angled, then angled back to close to medial line again; four conspicuous whitish spots on costa before apex; subterminal line defined by strong diffused dark proximal shade, from apex, oblique and slightly curved to behind SC⁵, then erect, double to hind margin at tornus; a black spot at termen on fold; slight terminal dots between the veins; fringe pale ochreous-brown tipped with rufous and blackened behind the tornal black spot.

Hind wing fuscous shot with ochreous, with a waved subterminal line from about R² to tornus and the termen (narrowly) pale; fringe pale from apex to R², then greyish and tipped with rufous to fold, where it becomes blackish; traces of a discal spot and a curved medial line; terminal dots as on fore wing, with a strong black terminal streak before tornus.

Underside of both wings cinereous-brown tinged with ochreous and finely irrorated with fuscous, the outer postmedial area slightly shaded with fuscous; the discal spot on fore wing not broken into three dots, that on hind wing sharp and black; a faint medial line and stronger postmedial nearly parallel with margin of wings; the subterminal line on fore wing as above but starting about 2 mm. from apex and bent out to SC⁵; that on hind wing visible from costa to tornus, pale and dentate; marginal dots and fringes as above; fore wing with some broad, fuscous subterminal clouding from R² to the fold.

Central Africa: Akanjuru River, Ruanda District, August, 1919. (T. A. Barns.) One ♂.

As in many *Achaea* species (♂) the spines on the mid-tibia are entirely concealed by hair, but there can scarcely be any doubt as to *tornistigma* belonging to this genus, with which it agrees perfectly. It appears to be nearest to *A. cupreitincta* Hmps., from Uganda, but is abundantly distinct.

OPHIDERINAE.

9. *Nagia dentiscripta* sp. n. (pl. XVII, fig. 9).

♀, 58 mm.

Head and palpus whitish mixed with black, the vertex of head with some tawny scales; antennal shaft blackish with some white at base; thorax above with a mixture of pale brown, black and metallic violet scales; abdomen above pale fuscous with some rough brown hair; abdomen beneath, pectus and legs pale brown, the tarsi broadly banded with black above, the fore tibia with some black scales.

Fore wing whitish, the basal inner area, the medial area and the termen except at costa thickly irrorated with brown and with some black scales especially near hind margin; some metallic scales near base; a blackish costal patch proximally to the subterminal line, shaped much as in *N. linteola* Gn., but blacker; the lines blackish, dentate, (the postmedial distally pale-edged); subterminal pale, with dark suffusion on each side; orbicular a slight brown point, reniform almost obsolete. Subbasal line excurved from costa to SC, then obsolete; two diffused dark blotches on costa, the second at about two-sevenths costa, marking the origin of the antemedial line, which is waved, nearly vertical to M, strongly angled out at fold and slightly excurved before hind margin; a dentate, vertical medial line from two-fifths costa, with a slight, diffused line distally to it; some slight brown marks in place of the reniform; postmedial line dentate, from costa at about three-fifths, outwardly oblique to R³, where and at M¹ it is strongly dentate, inwardly oblique to SC² and bent outward to hind margin at two-thirds; subterminal line angled out behind SC⁵ (at the end of the black patch) and excurved near middle; some black spots *between* the veins near termen and *at* the veins on termen; some slight dark streaks across termen; fringe chequered, with a pale line at base.

Hind wing fuscous with a narrow white medial band, a white subterminal line, from just before M¹ to fold, and the termen and fringe white from apex to just behind R¹; fringe otherwise fuscous with a fine pale line at base; some black shading at termen.

Underside of both wings predominantly fuscous, with paler shades here and there, especially on hind margin of both wings, at costa and termen of fore wing and apex of hind wing; both wings with inter-neural black dots near termen; fringes much as above but with a broader pale line at base; slight traces of discal spots (especially on

the hind wing) and of two or three lines, but all indistinct except the subterminal line of the fore wing from costa to R^1 and a white subterminal spot on hind wing behind M^2 .

It seems to me not impossible that this genus really embraces only two or three variable species, in which case this would probably sink as an aberration of *N. syba* Gn.; (or *amplificans* Wlk., if this is distinct from *syba*); but it is quite a distinct form from any other in Coll. British Museum and as the genus is at present classified must stand as a good species.

10. *Argyrolopha punctilinea* sp. n. (pl. XVII, fig. 10).

♂, 32 mm.

Head, body and wings pale greyish-brown; the wings above with some cerise-pink scales intermixed, below greyer; pectus whitish; tarsi broadly ringed with fuscous; tibiae with some fuscous scales; palpus predominantly blackish, intermixed with pale brown; antennal shaft brown.

Fore wing with some fuscous shading and with the lines defined on each side by fuscous suffusion, especially at costa. Subbasal line incurved from costa at about 1 mm. to M near base; some dark basal suffusion behind cell; antemedial line from costa at about two-sevenths, thence obsolescent, angled behind costa, bent inwards to M , and excurved to hind margin at about one-quarter; medial line suberect, broad, with the dark definition diffused, from near middle of costa, bent outwards in cell; orbicular a short, black, horizontal streak; reniform dark-ringed, slightly oblique, figure-of-eight-shaped, with the anterior half smaller (more compressed) than the posterior; postmedial line from costa at about three-fifths, with the proximal dark shading broken into black dots, the distal slight and broken by white dots on the veins, angled out behind costa, slightly incurved between the radials, inwardly oblique from R^3 to hindmargin at about two-thirds; some slight fuscous shading between the postmedial and subterminal lines; subterminal line strongly excurved behind SC^5 , R^1 and fold and angled in on R^2 and behind M^2 , the angles with the fuscous definition broadened out; a strongly crenulate black terminal line joined to the interneural black spots, which stand out very sharply; fringe grey-brown mixed with cerise-pink, with a fuscous line at middle and some shading between the veins at tip.

Hind wing reproducing the markings of the fore wing, with the exception of the subbasal and antemedial lines and the stigma; a

diffused discal spot on the medial line; the postmedial line waved, the subterminal straighter than on the forewing.

Underside of both wings pale brownish-grey, with discal spot, short anterior medial line (on hind wing continued to the discal spot), post-medial line, diffused subterminal shade and margin and fringe as above.

Congo Free State: Lufira Valley, "Dec. & Nov." (? Nov. & Dec.), 1918. (T. A. Barns.) One ♂.

This species seems to agree with Hampson's genus *Argyrolopha* except in the absence of the large crests on the second and third abdominal segments. As the abdomen of the Lufira Valley specimen is, unfortunately, denuded, it is impossible to say whether or not the crests should be present.

11. ? *Gorua polita* sp. n. (pl. XVII, fig. 11).

♂, 56—58 mm.

Head black mixed with white; palpus blackish, the inner side of joint 2 and tips of joints light brown; thorax above pale brown with some black scales on the patagia, the tegulae brighter, tipped with darker brown; antennal shaft brown; pectus, legs and abdomen above and beneath whitish-brown.

Fore wing pale shining glossy brown, showing a pinkish sheen in some lights, slightly tinged with ochreous about middle of wing; the lines and base of fringe blackish-brown. Subbasal line fine, double, excurved from costa to SC, obsolescent in cell, incurved from M to SM²; antemedial line oblique from costa at about one-fifth, slightly angled in behind SC, thence broadly excurved to hind margin at about one-fifth; some dark shading behind M between the antemedial and subbasal lines; orbicular a black dot; reniform indicated by a white dot; two outwardly oblique medial streaks from near middle of costa; postmedial line from costa at about two-thirds, strongly bent outward to SC⁵, irregularly dentate and inwardly oblique to fold, thence straight to near middle of hind margin; subterminal line pale, distally dark-edged, strongly angled outward behind SC⁴ and slightly behind SC⁵, nearly straight to M², behind which it is obsolescent and strongly angled inwards; a row of black and white interneural terminal dots; a double, oblique line starting in a diffused dark shade at apex and ending at hind margin close to antemedial line, accompanied by some diffused brown shading.

Hind wing coloured as fore wing, with a double, oblique line near base, a waved grey postmedial line; a subterminal row of black spots

between the veins with slight ochreous distal shading, outwardly oblique from costa to before M^2 , then strongly incurved; terminal spots and fringe as on fore wing.

Underside of both wings pale brown shaded with deeper brown, somewhat glossy, with crenulate postmedial line and subterminal row of black spots (more sharply defined on hind wing); orbicular and reniform spots reproduced below; hind wing with a discal dot; fore wing with the apex pale and two white spots on costa between postmedial and subterminal lines.

Congo River, below Lisala, May, 1920. (T. A. Barns.) One ♂. Also one ♂ from Aburi, Gold Coast.

A very distinct species, possibly really belonging to a new genus. Differs from Walker's diagnosis of *Gorua* in the following points: body slender (not "stout"); third joint of palpus fully one-fourth length of second (not "one-eighth"); antenna with bristles and short cilia (not "pectinate"); termen of fore wing only slightly oblique (not "very oblique"); tornus of hind wing scarcely angled (not hind wing with the exterior border obtusely angular"). But as the head, palpus (except the length of the third joint), glossy aspect, acute apex of fore wing, scarcely crenulate margins, etc., agree with that genus, I have placed it there provisionally.

12. *Egnasia scoliogramma* sp. n. (pl. XVII, fig. 12).

♀, 38 mm.

Head, thorax above, palpus and antennal shaft grey-brown, vertex of head and tegulae rather brighter brown, the inner side of palpus white; abdomen above dark cinereous; abdomen beneath, pectus, and legs white, the femora and tibiae shaded with fuscous, the tarsi broadly ringed with pale ochreous.

Fore wing grey-brown, slightly tinged with ochreous, with the markings pure white. Antemedial line gently excurved and slightly waved, from costa at one-third to one-third hind margin; reniform large, irregular, somewhat resembling an inverted letter Y, with a fourth section fitted into the middle of the V; postmedial line, irregularly dentate, oblique from costa, angled outward at SC^5 and inward at R^3 , from two-thirds costa to two-thirds hind margin; a subterminal lunule at costa; a very slight dark terminal line, fringe grey-brown with pale lunules at base and some white at tips.

Hind wing reproducing the colour and pattern of fore wing with

the exception of the antemedial line and subterminal lunule; the inverted Y-mark rather broadened; the fringe white towards tornus.

Underside of both wings more variegated, irrorated with violet scales—especially postmedially, and towards the hind margins with darker-brown medial shading, and some dark-brown on fore wing at costa and on subterminal area from costa to R^2 , and on hind wing near tornus; the pale markings of upper surface reproduced (with the addition of a slight subterminal line), but the Y-shaped marks less pure white and more sharply dark-outlined; fringes as above.

Congo-Belge: Avakuri, Ituri River, March, 1920. (T. A. Barns.)
One ♀.

HYPENINAE.

13. ? *Bleptina cryptoleuca* sp. n. (pl. XVII, fig. 13).

♂, 33 mm.

Head, thorax, palpus above and antenna dark brown, the thorax with some golden-brown scales in parts; palpus below (to near end of second joint), pectus and legs white, the tibiae and tarsi black above; abdomen dark cinereous above, whitish beneath.

Fore wing thickly irrorated with dark brown, the ante- and post-medial lines ochreous-brown, and orbicular dot (close to antemedial line), the reniform (except at middle), subterminal line and marginal dots white, the lines defined by blackish, especially distally. Antemedial line suberect, waved, excurved behind cell; reniform composed of two subparallel white lunules; postmedial line waved, bent out behind costa, angled in behind R^1 and incurved from R^2 to hind margin, with some proximal ochreous-brown suffusion except at costa; subterminal line bent out on SC^5 , angled in on R^2 and incurved behind M^1 ; the marginal dots on the veins, with slight dark shading between them.

Hind wing irrorated with brown, more heavily towards termen, with a diffused dark discal spot, pale, darkly defined postmedial and subterminal lines (only visible on abdominal third of wing) and white marginal dots on the veins, with dark shading between them.

Underside of fore wing bluish-white with pale postmedial and subterminal lines, a dark discal spot, slight dark medial shade and scattered brown irroration (strongest at costa and termen); margin as above. Hind wing shining white, tinged with bluish at termen, with sharply marked discal spot and a diffused dark subterminal line broken into

spots; an indistinct line nearer termen; black marginal lunules between the veins; fringe dark brown.

Congo Belge: Semliki Forest, E. Semliki Valley, Ruwenzori, December, 1919. (T. A. Barns.) One ♂.

This species is possibly not a true *Bleptina*, the second joint of the palpus being shorter than in *hadenalis* Moore, the fore wing somewhat shorter and the hind wing slightly more ample; in other respects it seems to agree with Sect. 1 of this genus in Hampson's "Moths of India."

14. *Hypena albirhomboidea* sp. n. (pl. XVII, fig. 14).

♀, 40 mm.

Palpus above, head and antennal shaft pale greyish-brown; palpus beneath and thorax bright tawny-brown; abdomen above whitish; abdomen beneath, pectus, and legs grey, the tarsi broadly banded with fuscous.

Fore wing white, thickly irrorated with bright tawny-brown and blackish, the brown predominant at costa and on veins, the blackish in and below cell, the subterminal area predominantly tawny-brown, with horizontal dark dashes between the veins, an oblique black dash from apex and slight indications of a fine black line close to termen; some dark shading behind M at base. Antemedial line indistinct, blackish, defined on each side by tawny, very oblique from costa to M, then inwardly oblique from M distinctly nearer base; a rhomboidal white spot in cell near antemedial line; postmedial line white, oblique, from nearly two-thirds costa to inner margin at middle, slightly incurved at cell, proximally defined by tawny, distally by blackish (especially at cell); the dark irroration sparser distally to postmedial line, then thicker again; a subapical white patch before the black streak (with the veins darkened); subterminal line white, slightly curved, broken by the broadly brown veins; some white on termen between the veins; some black, interneural terminal lunules; a number of sharply-marked curved black dashes on costa; fringe chequered whitish and dark brown, with a fine black line at middle.

Hind wing white with sparse, pale brown irroration—thickest on and around the veins at termen; a slight, diffused discal spot and strongly-marked brown terminal line; fringe whitish with slight traces of a brown line at middle.

Underside of fore wing blackish-brown, shading to paler greenish-

brown irrorated with black at apical half of costa and termen; some slight, wavy, blackish lines near termen; costal dashes, margin and fringe as above. Hind wing irrorated with pale greenish-brown and more sparsely with blackish; the base paler; a large dark streak on discocellulars, broad, diffused postmedial band and traces of a dark subterminal line, broadest and clearest near costa; marginal line and fringe as above, but with the line more broken into lunules.

Congo Belge: on Ruwenzori, Christmas, 1919, 2500 m. (T. A. Barns.) One ?.

Appears to belong to the genus *Hypena*, possibly related to *obsitalis* Hbn. The second joint of the palpus is long, nearly porrect, thickly clothed with rough hair above and with a slight tuft of rough hair below at end, distinctly curved; the third joint is tufted with rough hair on both sides for about two-thirds of its length, leaving the tip naked and sharply pointed as in the genus *Dichromia*. The abdominal crest is not visible, in which respect, as well as in the formation of the palpus, it agrees with *Dichromia*, but as it has more the general aspect of *Hypena*, and the palpus resembles that of some species placed there by Hampson, I refer it to that genus.

15. *Hypena euthygramma* sp. n. (pl. XVII, fig. 15).

♂, 30 mm.

Head, palpus, antenna, thorax and legs greyish-brown, the pectus, underside of legs and joints of tarsi paler.

Fore wing brown with some ochreous scales intermixed in parts; an almost obsolete antemedial line of the ochreous shade distally defined by fuscous, excurved from costa at about one-fourth to hind margin at nearly two-fifths, with an inward angle on SM^2 ; a black dot in cell distally to the antemedial line and another proximally to the postmedial line; postmedial line straight, erect, white, more than $\frac{1}{2}$ mm. in breadth, from costa at nearly three-quarters to hind margin at three-quarters; black spots at termen between the veins and a fine dark terminal line; fringe grey with a fine pale line at base.

Hind wing unicolorous dark grey with the veins a shade darker, a dark discal spot and a slight dark marginal line; fringe as on fore wing.

Underside of both wings grey, with marginal dark lunules and fringes as above. Fore wing with some dark apical shading and with the postmedial line indistinctly showing through from above. Hind-wing with a slight discoidal streak and very indistinct, curved post-medial line.

Tanganyika: Upper Ruwuu Valley, Urindi District, August, 1919 (T. A. Barns.) One ♂.

The second joint of the palpus is straighter than in *H. albirhomboidea* and has scarcely any visible tuft at the end below; the rough hair on the third joint ends more irregularly, not leaving so long a naked tip as in the last species.

16. *Hypena semlikiensis* sp. n. (pl. XVII, fig. 16).

♂, 32 mm.

Head, thorax, palpus, antenna and legs greyish-brown, the tarsi beneath and at the joints paler, more ochreous, the inner side of palpus and the foreleg beneath whitish; abdomen brownish-grey, paler beneath, with the anal tuft whitish.

Fore wing greyish-brown, a shade paler on terminal half; rather smoothly scaled. A slight, diffused, excurved antemedial line from costa at one-fourth to hind margin at one-third; a black spot in cell near antemedial line; postmedial line pale, proximally defined by dark brown, from near middle of costa to hind margin at nearly two-thirds, slightly excurved at cell, then straight; subterminal line obsolescent, defined by some proximal dark shading and by white dots between the veins, waved, bent outward behind SC^5 , about R^3 and before SM^2 , and inward behind R^1 and at M^2 ; some terminal dark lunules between the veins; fringe dark grey, paler at base.

Hind wing dark brownish-grey; terminal lunules and fringe as on fore wing.

Underside of both wings grey irrorated with brown; margins and fringes as above; traces of a dark postmedial line on costal half of both wings. Hind wing with slight discoidal spot.

Congo Belge: Semliki River, December, 1919. (T. A. Barns.) One ♂.

The antenna of this species is not "minutely ciliated," as Schaus cites for the genus *Hypena*, but with fascicles of cilia slightly longer than the antennal shaft. Second joint of palpus straight and without tuft of hair below at end; third joint with the rough hair extending almost to tip.

17. *Hypena ituriensis* sp. n. (pl. XVII, fig. 17).

♂, 38 mm.

Head, thorax above, palpus and antennal shaft slightly rufous-brown, the hair on second joint of palpus and crown of head tipped

with black; abdomen above cinereous with the crests dark brown (the basal one more golden-brown); abdomen beneath, pectus and legs whitish, the fore legs shaded with fuscous.

Fore wing rufous-brown shaded with violet, especially on the basal half of wing and near apex. Antemedial line double, obsolescent, angled outward behind costa and at fold and inward in cell and before hind margin; a black orbicular dot; a black medial line from about three-fifths costa to middle of hind margin, slightly angled out behind costa in cell, at fold and at hind margin, with a diffused, red-brown, proximal shade, broadening towards hind margin; reniform a black lunule surrounded (especially distally) by some yellowish shading; postmedial line obsolescent, double, waved, nearly parallel with the medial line; a row of black and white subterminal spots between the veins, from behind SC⁴ to hind margin; apex, pale violet-grey; a dark terminal line with yellow proximal shading between the veins; fringe brown, with a pale line at base.

Hind wing uniform grey-brown, with dark terminal line; fringe as on fore wing.

Underside of both wings violet-white irrorated with brown (the fore wing more strongly shaded with brown, except behind fold); discal spots (very black on hind wing); slight postmedial and subterminal lines (the latter, on the fore wing, with deep black spots behind SC⁴ and SC⁵); dark terminal lines, somewhat broken into lunules; fringes as above.

Congo Belge: Itoa River, Ituri Forest, Congo-Semliki Watershed, January, 1920. (T. A. Barns.) One ♂.

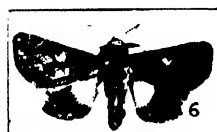
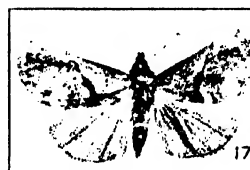
This species has crests on the first four abdominal segments, and the palpus has an unusually short third joint and a rather short second joint with a thick, triangularly-shaped tuft of hair above, but it falls to the genus *Hypena* by Hampson's keys both in the "Moths of India," and the "Annals of the South African Museum."

Two unnamed specimens in the British Museum, from Uganda, are near to this; perhaps forms of the same species.

Since this description was prepared another ♂ has come to hand (from Loya River, Irumu, Congo Belge, February, 1920), which is rather more strongly marked (especially the postmedial line on under side of both wings), but seems otherwise exactly to agree. Probably in fresher condition.

EXPLANATION OF PLATE XVII.

- Fig. 1. *Timora joiceyi* ♂ .
2. *Craterestra sufficiens* ♂ .
3. *Aspidifrontia contrastata* ♀ .
4. *Diaphone barnsi* ♀ .
5. *Graphania tortirena* ♀ .
6. *Plusiophæa metallica* ♂ .
7. *Achaea determinata* ♂ .
8. „ *tornistigma* ♂ .
9. *Nagia dentiscripta* ♀ .
10. *Argyrolopha punctilinea* ♂ .
11. *Gorua polita* ♂ .
12. *Egnasia scoliogramma* ♀ .
13. *Bleptina cryptoleuca* ♂ .
14. *Hypena albirhomboidea* ♀ .
15. „ *euthygramma* ♂ .
16. „ *semlikensis* ♂ .
17. „ *ituriensis* ♂ .
18. *Hyblaea euryzona* ♂ .



HYBLAEINAE.

18. *Hyblaea euryzona*, sp. n. (pl. XVII, fig. 18).

♂, 32 mm.

Thorax above ochreous-brown; antennal shaft dark brown; head, palpus above and maxillary palpus red-brown; palpus beneath, pectus and legs whitish tinged with yellow; tarsi irrorated with brown, hair-pencil on hind tibia reaching fully to end of second joint of tarsus, distinctly double, the inner half whitish, the outer whitish suffused with pale vermilion (especially towards tip); abdomen above reddish-brown with the basal and anal segments and segmental lines orange, beneath orange largely intermixed with fiery red.

Fore wing rich ochreous-brown shaded with slightly darker, more chocolate-brown and with two slight, greyish spots near apex, on costa and termen. Markings obsolescent, much as in the common, world-wide *H. puera* Cr., the least indistinct being the postmedial costal patch and postmedial line (broadened behind the discocellulars and before hind-margin, obsolescent between these three patches), and a dark shade at apex between the two grey spots; two ill-defined lines distally to the postmedial and a diffused dark terminal shade; fringe proximally slightly paler than the wing, distally a shade darker than wing.

Hind wing golden-yellow with the base and terminal area black; a golden patch breaking into the black at termen behind M^2 ; fringe reddish from apex to M^2 , then golden-yellow; the black areas unusually reduced.

Underside of both wings golden-yellow; the fore wing at costa and fringe, the hind wing (broadly) on distal two-thirds of costa to termen, and a subterminal band ending in a broad streak in fold sparsely irrorated with fiery-red; fore wing with a large black discal spot and a broad black subterminal band from SC^4 to SM^4 (where it throws out a proximal spur nearly to the discal spot); hind wing with a diffused black spot on the red band behind M^2 .

Congo Free State: Kikura Stream, Lufira Valley, May 8, 1919. (T. A. Barns.) One ♂.

Perhaps nearest to the common West African *occidentarium* Holl., but can be at once distinguished by the colour of fore wing, the reduced black shading on hind wing, and much reduced black areas on under surface, as well as by the longer hair-pencil on hind-tibia. This pencil frequently gets damaged, but appears to differ considerably in

the different species, which may ultimately have to be sorted out largely by this character. The other African species known to me all have more black on the hind wing above and on the under surface than *euryzona*.

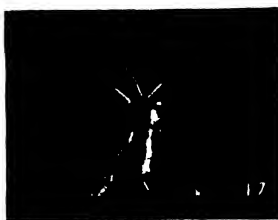
This subfamily does not appear to me to belong to the *Noctuidae* at all, being very distinct, not only in the possession of a maxillary palpus but also in the hair-pencil on hind-tibia (entirely distinct in character from anything known to me in the true *Noctuidae*) and in the neuration of the fore wing, the cell being very narrow and near middle of wing, with SC^1 arising near base, SC^2 from well before middle of wing, SC^3 , SC^4 , SC^5 , and R^1 all free and more or less parallel with one another. The basal orifice of the abdomen does not appear to be at all in the Noctuid position.

IV.—NEW GEOMETRIDAE.

By L. B. PROUT, F.E.S.

HEMITHEINAE.

1. *Prasinocyma neglecta*, sp. nov. (Text fig. 17).



17. *Prasinocyma neglecta* ♂.

♂ ♀, 33, 36 mm.

Face dull red-brown, with a few green scales, below with a narrow white band. Palpus in ♂ about $1\frac{1}{2}$, with third joint moderate, in ♀ at least 2, with third joint long; first joint and underside of second and third white, second joint above light brown, third more reddish. Crown green, only extremely narrowly white in front; antennal shaft white to near middle, then light brown, more or less tinged with red; pectinations in ♀ moderate, light ochreous. Thorax and abdomen above green, beneath white; the abdomen with traces of minute white medio-

dorsal dots and with anal extremity white. Legs white, the first two pairs reddened on upper and inner sides; hind tibia of ♂ dilated, with very short terminal process, a short white tuft at femoro-tibial joint, and a fairly strong white hair-pencil.

Fore wing rather broad; SC¹ anastomosing slightly with C, or free, R¹ very shortly stalked, M¹ just separate; bright green, with moderately prominent white strigulae; costal edge pale buff, tinged, except towards base, with roseate; a moderate black celldot; a white spot or dash on middle of hind margin, nearly or quite reaching M², bordered distally with blackish; fringe nearly concolorous, with a pale line at base and indistinctly whitish tips.

Hind wing ample, termen moderately bent at R⁴; concolorous with fore wing, and with a similar black celldot; fringe as on fore wing.

Underside whitish-green, the fore wing in anterior half and the fringe of both wings rather greener; fore wing with costal edge narrowly buff.

East Tanganyika: Upper Ruvubu River, Urindi District, July and August, 1919. (T. A. Barns.) Type ♂ and allotype ♀, in coll. Joicey. Also a ♀ from Namadidi, ten miles from Zomba, Nyassaland, January, 1920 (H. Barlow).

A common and widely distributed species, which has been left mixed among *congrua* Walk., *pulchraria* Swinh., and other allies. Tring Museum has it from Nigeria, Angola, Unyoro, Uganda, British East Africa, and Nyassaland, the British Museum from Old Calabar (Swinhoe's "type ♀" of *pulchraria*!), Uganda, British East Africa, Nyassaland, and Transvaal. The markings are nearly those of *nigripunctata* Warr., *trifilifimbria* Prout, &c., the bright coloration that of *pulchraria* Swinh., or the brighter specimens of *scissaria* Feld.

STERRHINAE.

2. *Eois oressigenes* sp. nov. (pl. XVIII, fig. 12).

♀, 26 mm.

Head red-orange, the fillet, lower extremity of face and palpus beneath yellower. Thorax and abdomen above red-orange, somewhat mottled, beneath paler, duller and more ochreous.

Fore wing with areole fairly large, subcostals normal, M¹ not stalked; yellow, nearly covered with a network of lunulate rust-red lines, which leave mere interneural spots of the ground-colour; markings blackish-

grey, with a slight tinge of slate-colour; antemedian at one-fifth, thick (apparently double but confluent), somewhat dentate outward on M and SM²; celldot blacker, at scarcely two-fifths; a regularly excurved line shortly beyond (at rather less than one-half), duplicated distally by a weaker, more macular, less defined line or shade; a row of interneural spots at nearly four-fifths, oblique outward from costa, otherwise nearly parallel with termen; thick longitudinal shades between the radials and near tornus, connecting these spots with the termen, the radial shade also faintly indicated proximally hereto (as far as to the median line); blackish terminal dots at the vein-ends.

Hind wing with termen full, or slightly bent about R³-M¹; M¹ just separate; markings of fore wing (except first line) continued; celldot wanting.

Underside duller, ochreous; the lunulate lines thinner, greyish; the dark markings nearly as above, though rather less strong.

Tanganyika: Niragongo Volcano, Kivu, 2,800 m., Sept., 1919. (T. A. Barns.)

Entirely distinct from any African species yet known, recalling some of the South American *Eois* (= *Cambogia*), e.g., *snellenaria* Möschl. (*Verh. Zool.-bot. Ges. Wien.* xxxi, 408, t. 17, fig. 19).

LARENTIINAE.

3. *Xanthorhoë latissima* sp. nov. (pl. XVIII, fig. 7).

♂, 33 mm.

Head and body dark fuscous. Face with the projecting cone rather strong. Palpus about two, the second joint with rough hair-scaling above and beneath, third joint moderate, partly exposed. Antennal pectinations well separated, reaching nearly to the thirtieth joint, nowhere very long (little over two). Tarsi pale at the ends of the joints.

Fore wing unusually broad, costa well arched in distal part, termen slightly waved, at least anteriorly; pale violet, with slight whitish admixture; basal area suffused with olive-brown, separated by a fine pale line from a straightish oblique band of similar suffusion nearly 2 mm. in width; median band velvety black-brown, very broad (6 mm. at costa, just over 3 mm. at hind margin), bordered by rather fine whitish lines; the antemedian oblique outward, with a small V-shaped indentation subcostally and minute indentations on M and SM²; the postmedian slightly sinuous subcostally, markedly oblique outward in

anterior half, forming a rounded lobe not far from termen at and behind R^3 , then bending suddenly inward, so as to reduce the band to about half its width; subterminal not very strong, consisting of fine whitish lunules, filled in proximally by ill-defined brown spots; a very much larger spot at costa reaching nearly to the postmedian; distal area feebly dark-shaded; terminal line not very strong, slightly interrupted at the veins and folds; more brownish, with fine weak pale lines at base and beyond middle.

Hind wing ample; apex well rounded, termen straighter before and behind than at R^3 ; dark-grey with very slight whitish irroration; costal area more white-mixed; a black celldot; a double, fine whitish postmedian line continuing that of fore wing, fairly straight to R^3 or M^1 rather near termen, here strongly bent, near abdominal margin slightly incurved; faint traces of other lines; terminal line finer than on forewing; fringe similar.

Fore wing beneath duller; median band greyish, not sharply-defined, especially proximally, but containing distinct beginnings of dark lines costally; postmedian double pale line fairly strong; subterminal well defined, at least anteriorly, where the lunules are confluent; termen and fringe as above. Hind wing beneath with more of a red-brown tinge than above, rippled as far as the postmedian with feeble lines; celldot, postmedian and subterminal lines developed.

"Central Africa," without more exact locality. (T. A. Barns.)

4. *Larentia barnsi* sp. nov. (pl. XVIII, fig. 5).

♂, 31-34 mm.

Closely like *heteromorpha* Hmps. (Tr. Zool. Soc. xix. (2) 128), apparently identical in structure, possibly a colour-form of it, but constant. Both wings deep ochreous, only the hind wing above slightly paler ochreous. Fore wing above with the markings on an average darker than in *heteromorpha*, generally strongly expressed, the edgings near the median band pale, the small V-shaped subterminal spots also pale, often in part whitish. Hind wing above almost unicolorous, with the markings of underside feebly showing through; a fairly distinct celldot sometimes present. Both wings beneath rather strongly marked, the postmedian line of the hind wing perhaps less acutely angulated on R^3 than in *heteromorpha*.

Ruwenzori (W. side) at 4,000 m. (one at 3,900), flying by day, Christmas, 1919, the type labelled as feeding at giant lobelias. 7 ♂♂ in coll. Joicey.

The distal margin of the hind wing is nearly smooth, not crenulate as in the type of the genus (*clavaria* Haw).

5. *Larentia altipeta* sp. nov. (pl. XVIII, fig. 6).

♀, 31 mm.

Head and body grey-brown with some black irroration and in places (especially on the face, vertex and breast) strongly irrorated with white; first joint of palpus white. Abdomen above with white (dorsal) and black (subdorsal) spots on anterior segments.

Fore wing shaped and coloured as in *monticolata* Auriv. (Schwed. Zool. Exped. Kilim. (9) 44, t. 2, f. 23), brown clouded with velvety-black, especially at the borders of the basal and median areas; markings closely similar to those of *monticolata*, differing as follows: outer edge of basal patch almost straight, only with a slight inward curve between fold and SM²; proximal edge of median area rather less oblique at costa, but rather more oblique at hind margin; distal edge of median area not dentate (except minutely on SM²), formed almost as in *sjöstedti* Auriv.; a more pronounced subtriangular black patch between SC⁵ and R³, bounded anteriorly by a white line; oblique apical line sharply differentiated; fringe strongly chequered (lost in the only example of *monticolata* known to me).

Hind wing grey, more feebly marked than in *monticolata*.

Ruwenzori, 3,000 m., Christmas, 1919. (T. A. Barns.)

L. sjöstedti Auriv. (loc. cit. p. 45, t. 2, f. 20), not so well figured and described as most of Aurivillius' Kilimanjaro species, is unknown to me and perhaps still nearer to *altipeta*, though the figure does not at all suggest it. In any case it cannot be identical, for—*inter alia*—it is said to have the proximal edge of the median area "almost straight between the costal margin and the middle of cellule 1b." In the species compared the ♂ antenna is not pectinate, but I suspect it will prove to be pectinate in *altipeta*, as in *inaequata* Walk.

6. *Calostigia conchulata* sp. nov. (pl. XVIII, fig. 15).

♂, 23 mm.

Head spotted with brown; face pale ochreous-grey with small projecting cone of scales. Palpus about two, strong, with projecting hair-scales; mixed with dark fuscous on outer side. Antenna pectinate from the third to about the twenty-fourth joint, with rather long, well-separated branches, distally merely dentate and ciliate. Thorax and

abdomen concolorous with wings; abdomen with paired (subconfluent) dark spots. Legs pale ochreous-grey, more or less dark-spotted on upper and inner sides.

Fore wing glossy-whitish, with light grey-brown suffusions; costal margin as far as postmedian (with the exception of narrow pale median space) dark-spotted; markings grey-brown; basal patch slightly darkened, bounded by a strong, nearly vertical wavy dark line; median band of moderate width, bounded by slightly crenulate wavy dark lines, the antemedian slightly and regularly excurved throughout, the postmedian slightly sinuous, straightest between the radials, very gently excurved between M^2 and SM^2 , with no marked lobe in middle; three faint lines of dark irroration indicated between basal patch and median line; two lines proximally, and apparently three distally indicated on the median band, connected and obscured by dark shading; only a small patch around the minute celldot (reaching costa) and narrow interrupted streak from this to hind margin remaining pale; a narrow white band (clearest proximally) beyond the postmedian, intersected by a very faint dark line; distal area irregularly suffused, bounded (at least proximally) by an ill-defined and irregular dark line; subterminal line lunulate-dentate, only developed anteriorly, where it is filled in proximally with ill-defined dark spots; a (not very conspicuous) white dash at apex, the terminal clouding darkest behind this; terminal line indicated by paired dots at the veins; fringe nearly unicolorous.

Hind wing glossy; dirty white, unmarked, except for some slight spots at abdominal margin.

Fore wing beneath slightly suffused from base to postmedian, costally darker, with irregular irroration from base to postmedian and (more weakly) near termen; a celldot and postmedian line indicated, the latter strongest between M^1 and abdominal margin.

Tanganyika: Niragongo, Kivu, October, 1919. (T. A. Barns.)

A nearly unmarked specimen taken at the same time and place (at 4000 m.) is perhaps a form of the same species, perhaps a near ally. Rather larger and rounder-winged, the celldot of fore wing less minute, the postmedian line apparently rather more curved. Without more material I do not venture to name it or pronounce definitely on its status. Both specimens show the palpal and antennal structures of *Xanthorhoë conchata* Warr. and bear (except for the biangulate discocellulars of the hind wing) a good deal of resemblance to that species; smaller, fore wing and underside paler (not reddish), wings rather shorter; the pale colour is almost that of *Epirrhoë cancellata* Warr. (Nov. Zool. vi. 299) and *annulifera* Warr. (Nov. Zool. ix. 515).

7. *Calostigia phiara* sp. nov. (pl. XVIII, fig. 9).

♂, 30 mm.

Structure closely as in *conchulata* Prout (supra). Shape and facies more as in *Euphyia altispex* Prout. Face brown, mixed with black. Palpus brown, at base whitish. Vertex and thorax mottled whitish and brown. Abdomen whitish with dark irroration and some brown dorsal spots. Legs nearly concolorous.

Fore wing glossy white with a tinge of brown; markings dark grey-brown, in costal region (especially the basal patch) a little brighter and more red-brown; basal patch dentate outward subcostally and bluntly bent outward in middle; median band 6 mm. broad at costa, 3 at hind margin, its proximal edge angled inward at fold, its distal slightly incurved at R^2 , rather acutely angled behind R^3 , then oblique inward to M^2 ; celldot small, black; distal shades similar to those of *altispex*, termen posteriorly as dark distally to subterminal as proximally; terminal line thick, slightly interrupted at and midway between veins; fringes dark proximally, less so distally, with a fine paler dividing-line.

Hind wing with DC weakly biangulate; glossy-whitish, with the markings of underside very faintly showing; termen with dark paired dots in posterior part only; fringe grey-brown, slightly paler than on fore wing but similarly divided.

Underside similar, except in its less brown colour, smaller cellspots, less in bent postmedian, and whiter subterminal, to that of *Euphyia altispex*; terminal line and fringes nearly as above.

Congo Belge: East side of Semliki River, Ruwenzori, 2300 m., November, 1919. (T. A. Barns.)

Except in absence of green colouring rather similar to *Xanthorhoe argenteolineata* Auriv. (Schwed. Zool. Exped. Kilim., (9) p. 46, t. ii, f. 17), which has dentate-ciliate ♂ antenna, non-biangulate discocellulars, etc.

8. *Euphyia altispex* sp. nov. (pl. XVIII, fig. 10).

♂, 34 mm.

Face with slight projecting cone of scales; whitish brown-grey, with strong irroration. Palpus almost 2; largely black, the first joint and extreme tip pale-mixed. Crown and proximal part of antenna black-mixed; antenna triangularly scaled, giving a minutely subserrate appearance; ciliation minute. Collar somewhat ferruginous. Thorax and abdomen whitish-grey, black-mixed; a clear ferruginous spot at base of abdomen dorsally. Legs partly irrorated, partly infuscated.

Fore wing with costa gently arched, termen faintly sinuous; white, mostly with dense fuscous irroration; basal area formed of denser irroration, more tinged with reddish, bounded by an outwardly oblique white line, which is angled behind SM^2 , and thence runs inward to hind margin; median band weak, red-brown (mixed reddish and dark fuscous), the central part less red than the proximal and distal; broad anteriorly, edged by moderately thick white lines, the antemedian oblique outward from less than one-third costa, angled outward in cell (thence less oblique) and again at fold, almost vertical posteriorly, the postmedian from about two-thirds costa, indented on the veins (deeply on SC^5), approximately perpendicular to the lobe at R^3 , then oblique inward to M^2 , thence slightly oblique outward, the portion posterior to M^2 thus considerably narrowed; cellspot black, elongate, with some white scales round it; a curved dark line (defined by a pale spot at costa) beyond cellspot, bounding the less red area; space beyond postmedian traversed by thick whitish and slender incomplete fuscous lines, the veins tinged with buff and red scales; a white longitudinal streak in front of R^1 , leading to the slenderer, more interrupted whitish apical streak; the area in front of these streaks more mottled; subterminal line fairly thick, white, interrupted, weakly lunulate, defined by dark markings proximally; a triangular dark terminal shade behind apical dash, its apex on R^2 , its posterior extremity just behind R^3 ; diffused reddish vein-spots at termen; terminal line strongly blackish-fuscous, scarcely interrupted; fringe strongly chequered.

Hind wing white, tinged as far as the postmedian line with greyish; celldot black; postmedian line grey, feeble anteriorly, less so posteriorly, where it is incurved about M^2 ; terminal line weaker and more interrupted than on fore wing; fringe whitish, very feebly marked.

Both wings beneath strongly marked, with elongate black cellspot, well marked postmedian (inbent at R^2 and lobed outward about R^3) and pale (whitish-brown) distal area, with broad reddish-brown (or red-grey) proximal shades to the subterminal, that of fore wing mixed with blackish in the anterior half; fore wing with glossy smoky suffusion from base to postmedian, the costal margin more ochreous-brown and with traces of the anterior dark terminal shade; hind wing as far as the postmedian irrorated with reddish-grey, and with indications of dark transverse lines; fringes as above.

Congo Belge: Vissoke Volcano, Mikenno Mountains, Kivu, October, 1919. (T. A. Barns.) Type in coll. Joicey.

A smaller and duller ♂ from Nirango Volcano, Kivu, Tanganyika

Territory, 4,000 m., September, 1919 (T. A. Barns) has the central band almost unmixed with red.

This species slightly recalls an overgrown *Epirrhoë submaculata* Warr. (Nov. Zool. ix. 515).

9. *Epirrhoë euthygramma* sp. nov. (pl. XVIII, fig. 8).

♂, 27 mm.

Head and palpus pale clay-colour, heavily irrorated with black, the palpus towards its extremity predominantly black. Antenna pubescent. Collar fawn-colour. Thorax and abdomen pale clay-colour, more tinged with cinnamon above than beneath, above (excepting base of abdomen) with some ill-defined grey cloudings; abdomen with one or two appreciable grey crests anteriorly. Legs partly infuscated, especially the fore leg, on which the pale extremities of the tarsal joints are rather conspicuous by contrast.

Fore wing rather broad, apex rather pronounced, termen straightish to middle, then slightly curved, becoming rather more oblique; pale clay-colour; basal area with some slight dark irroration and slightly dark-shaded costally; subbasal line double, straight, exceedingly fine and weak; median band broad, limited by pure white lines; the ante-median straight, from hind margin at about one-third, nearly vertical, obsolete in front of SC; the postmedian with a very slight proximal curve at costa, minute subcostal indentation, scarcely noticeable sinuosity at the usual positions, at hind margin slightly oblique outward; the band from the hind margin to near SC and SC⁵ velvety black-brown, anteriorly scarcely darker than the ground-colour (though more tinged with fawn) traversed by five grey lines; three dark lines (the first very fine) between the postmedian and the subterminal; subterminal pure white, interrupted by an oblique white dash from apex and a blackish cloud thence to R³; conspicuous, though rather less pure white patch between subterminal and termen from R³ to M²; terminal line black, interrupted by dots of the ground-colour on the veins and weakened or slightly interrupted midway between; fringe irregularly mottled with grey and with a fine whitish line beyond middle.

Hind wing rather paler and more greyish, almost uniform from base to postmedian but with slight indications (clearest at abdominal margin) of three or four wavy darker lines; postmedian fine, white, wavy at abdominal margin oblique outward; a fainter pale line just beyond; subterminal line and the distal blotch indicated behind R³; a small brown patch at abdominal margin just proximal to the subterminal; terminal line and fringe as on fore wing.

Both wings beneath suffused with ochreous, and moderately irrorated; small black celldots; most of the markings of upper side indicated, but weak, the postmedian clearest, very finely dark, whitish-edged distally, the dark part of the central fascia scarcely differentiated (slightly grey, especially behind M^2).

Congo Belge: Mikenno Mountain, N. Kivu, October, 1919. (T. A. Barns.) Type in coll. Joicey.

10. *Hydrelia sjöstedti mionoseista* subsp. nov. (Text fig. 18).



18. *Hydrelia sjöstedti mionoseista* ♂.

♂.

Distinguished from the name—typical form of *sjöstedti* Auriv. (Schwed. Zool. Exped. Kilim. (9) p. 42, t. ii, fig. 26, from Kilimanjaro) by having the dark parts slightly less blackish-grey with a stronger slaty gloss, fore wing with a fine, nearly straight white antemedian line present (as in *argyridia* Butl. and *disparata* Warr. Nov. Zool. iv, t. v, fig. 12), median band distally, and especially the white band beyond it, less extremely projecting than in *sjöstedti*, the distal area consequently of more uniform width throughout; hind wing with the angulated median line extremely faint or obsolete; both wings with the fringes paler, being dirty whitish, on the proximal half chequered with grey opposite the veins (in *sjöstedti* almost uniform black-grey in proximal half, white-grey or dirty whitish in distal).

Mikenno Mountain, N. Kivu, Congo Belge, August, 1919. (T. A. Barns) type and another ♂; Karissimbi, Kivu, September, 1919, one ♂. In coll. Joicey, collected by Mr. T. A. Barns.

11. *Asthenotricha semidivisa euchroma* subsp. nov. (pl. XVIII, fig. 22).

♂, 25 mm.

Rather larger than *semidivisa* Warr.* (Nov. Zool. viii. 11) from Uganda and more brightly coloured, the pale stramineous parts of

* Warren's type measures barely 24 mm., not "26 mm." as given.

the fore wing, excepting the tornal region, being irregularly suffused with bright ochreous and reddish, the median area mostly bright red-purple with pale patches at costa and blackish lines; celldots with a broad white circumscription except at proximal edge, where there are only a few white scales; the white again defined by a fine blackish line; oblique streak along R^8 thick, variegated with purple and reddish.

Underside whitish, with the dark marking rather strongly expressed in glossy grey.

Congo Belge: Mikenno Mountain, N. Kivu, October, 1919. (T. A. Barns.) Type in coll. Joicey.

12. *Asthenotricha straba* sp. nov. (pl. XVIII, fig. 11).

♂, 25-26 mm.

Very similar to the preceding, differing as follows:—

Distal margins slightly more crenulate. Ground-colour more uniformly suffused on both wings with bright ochreous. Fore wing with the lines finer; an angulated subbasal line sharply expressed (subbasal area suffused and blurred in *semidivisa*); median area more broadly posteriorly, the suffusions from cellspot to hind margin predominantly black; celldot much smaller, placed close to the proximal margin of the white spot; postmedian line forming a V-shaped angle outward on R^1 ; longitudinal line of distal area very thin, blackish; a fine, uninterrupted terminal line. Hind wing with the hair tuft highly developed, bright ochreous, only with a few dark hairs; proximal band irrorated with blackish; terminal line as on fore wing.

Congo Belge: Mikenno Mountain, N. Kivu, October, 1919 (type). Tanganyika: Niragongo Volcano, Kivu, September, 1919.

I have also seen this species from Mount Kenya and Mount Aberdare.

13. *Asthenotricha malostigma* sp. nov. (Text fig. 19).

♂, 29 mm.

Head, thorax and abdomen pale grey, the collar somewhat more brownish.

Fore wing broad; glossy grey (of the same colour as *Hydrelia costalis* Auriv., from Kilimanjaro) with the markings white; ante-median line thicker and more distinct anteriorly and posteriorly than

in middle, oblique outward from before one-third costa, sharply angulated subcostally near the cellspot, then approximately vertical to just beyond one-third hind margin, but angulated outward on fold; cellspot rather large (over 1 mm. in diameter), round, followed posteriorly by a vague brownish patch; postmedian line thick, at about two-thirds, rather deeply inbent and thickened between the radials, lobed outward at R^3-M^1 , then gradually receding to behind M^2 , so as to suggest a long shallow curve inward between M^1 and SM^2 ; terminal dark line slight, interrupted; fringe concolorous, distally rather paler.



19. *Asthenotricha malostigma* ♂.

Hind wing grey, slightly darker proximally; hair-tuft ochreous-brown; antemedian line wanting; cellspot more proximal, placed in anterior corner of cell, followed at abdominal margin by a white patch; postmedian still thicker than on fore wing, its inward bend at the radials slighter than the posterior one; faint indications of a thinner line beyond.

Underside similar, but with the *fore* wing darker especially proximally, its first line wanting, a whitish hind-marginal patch developed opposite the cellspot.

Vissoke Volcano, Kivu, 2600 m., October, 1919. (T. A. Barns.) Type in coll. Joicey.

14. *Lobidiopteryx stulta* sp. nov. (pl. XVIII, fig. 20).

♂, 37 mm.

Head and body yellowish olivaceous (possibly slightly discoloured). Palpus not quite $1\frac{1}{2}$ (shorter than in the type species, *L. veninotata* Warr., Nov. Zool. ix. 513), the longish hair of proximal half cream-colour to cream-buff, as also the hair of pectus. Fore leg alternately black and pale, the black parts the more extended.

Wings—especially the hind wing—rather shorter than in *veninotata*.

Fore wing much paler (yellowish-olivaceous, almost entirely without black scaling), the markings much weaker, being merely

deeper olivaceous; a small patch of blackish irroration between the bases of the median veins.

Hind wing with SC^2-R^1 slightly longer-stalked than in Warren's type; also pale but with a slight fleshy tinge; quite without markings.

Underside similar, the fore wing with the markings still more indefinite, apically rather more smoky.

Ituri Forest, Central Semliki Watershed, N.W. of Beni, Congo Belge, January, 1920. (T. A. Barns.) Attracted by lamp.

15. *Cleora inaequipicta*, sp. nov. (pl. XVIII, fig. 14).

♂, 34 mm.

Head brown, the face darker brown. Palpus rather short, first joint with long projecting hair-scales below, second joint with moderately projecting scales, third joint very small, not distinct, blackish. Antenna not long, pectinate from base to about thirty-second joint, the branches long; apical joints (about six) merely dentate with slight ciliation. Thorax brown, mottled above with dark brown, the metathorax with black-brown. Abdomen brown, mottled (especially on sides) with black-brown; dorsally narrowly whitish, with rather large paired blackish spots. Fore and middle legs mottled with blackish; (hind legs lost).

Wings shaped nearly as in narrow-winged *cinctaria* Schiff., the hind wing slightly more convex about R^3-M^1 ; the fore wing not crenulate; the hind wing scarcely so, but with a feeble sinuosity between the radials.

Fore wing with SC^1 and SC^2 both free; fovea well developed; whitish-brown, with black-brown irroration, the veins in part, a vague patch round the fovea and an ill-defined band outside the postmedian mixed with ochreous; proximal area moderately and median area strongly and broadly clouded with black-brown, obscuring the markings; postmedian scarcely defined except by the ochreous band which follows it, arising in a spot at two-thirds costa, incurved subcostally, bluntly lobed outside cell, very slightly incurved behind; subterminal line whitish, fine and not very distinct anteriorly and posteriorly, broader and more strongly lunulate-dentate between R^3 and M^2 ; irregular dark shades proximally to this line and (especially between the radials and at tornus) distally; terminal line thick, black, slightly interrupted at the veins; fringe with dark chequering opposite the veins.

Hind wing predominantly pale, the dark irroration sparser, ochreous cloudings scarcely indicated; a black celldot; a regularly crenulate

dark postmedian line (curved nearly parallel with termen) little beyond ; a thick median shade arising at abdominal margin in contact with the postmedian, touching the proximal side of celldot, becoming obsolescent anteriorly ; the subterminal line and its dark shadings only well developed from tornus to R¹ ; terminal line and fringe as on fore wing.

Fore wing beneath pale brown, with dark cloudings as far as the postmedian and proximally to the subterminal, but less strong than above ; terminal line more slender, more punctiform or macular ; fringe sharply chequered. Hind wing beneath with similar markings to upperside but rather weaker.

Lufira Valley, November and December, 1918. (T. A. Barns.) Type in coll. Joicey.

16. *Pitthea sospes* sp. nov. (pl. XVIII, fig. 13).

♂, 42 mm.

Face white, with the overhanging tufts black. Palpus black, the first joint bright orange beneath. Vertex and antenna black, the pectinations rather heavy. Thorax black, beneath with some orange admixture. Abdomen above black, beneath mostly orange. Fore coxa and all femora with conspicuous white spot at base, that of hind femur the smallest.

Fore wing rather broader than in *neavei* Prout ; black, with the bands deeper orange at their borders than in *neavei* ; antemedian much broader, reaching base between the black costal edge and cell, its breadth throughout approximately 5 mm., its distal edge minutely dentate outward on SC, M and fold ; outer band also broader than in *neavei*, reaching costal margin.

Hind wing with the band deep orange, on upperside nearly as ample as on underside, where it resembles that of *neavei* ; beneath, in addition, with an orange line along a great part of SM³.

N. Rhodesia : Chambezi Valley, Karunga River, 4,500 ft., January, 1917. (T. A. Barns.) Type in coll. Joicey. There are also two examples in the British Museum, collected by the late Mr. H. C. Dollman, in the Solwezi district, N.W. Rhodesia.

17. *Pitthea neavei aurantifascia* subsp. nov. (pl. XVIII, fig. 2).

♂ ♀, 37—40 mm.

Only distinguishable from *n. neavei* Prout (Nov. Zool. xxii, 374, Nyassaland), by the colouring of the bands, but this quite constant.

Fore wing with the bases subtranslucent whitish, rather glossy, only becoming orange at the extremities and the veins.

Hind wing with the band orange-yellow, not at all red.

Underside also with the colouring somewhat paler than in the Nyassaland type.

Lake Tshohoa, Ruanda District, Tanganyika Territory, August, 1919 (T. A. Barns). 4 ♂♂ (including the type) and 1 ♀ allotype (quite similar except for the shorter antennal pectinations) in coll. Joicey.

18. *Terina tanyeces* sp. nov. (pl. XVIII, fig. 21).

♂, 34 mm.

Face yellowish-white, purer white at lower edge, the upper part with a large central grey cloud. Palpus white, second joint tinged with yellowish, third joint mixed with black-grey. Vertex and collar black-grey. Antenna black. Thorax and abdomen yellowish-white. Coxae and femora mixed with yellow; fore and middle legs largely blackened above; hind tarsus slightly tinged with grey.

Fore wing white, proximally suffused with yellow; a small golden-orange basal patch in front of cell and slight longitudinal streaks or lines of the same in and behind cell; an ample but very irregular black border, commencing in a very fine line at base of costa, broadening so as to cross SC at 4–5 mm. from base, distally occupying on an average about half of the wing, but with very long teeth of the ground-colour projecting in cell (almost to DC) and behind M^3 from its origin (tapering to a point on fold close to termen) and a subsidiary curved tooth running out from the last-named in front of M^2 near its origin; a long oval white spot between the radials, nearer to DC than to termen; fringe black.

Hind wing white; a black apical patch, about 5 mm. long, proximally bounded behind by SC^2 , distally reaching half-way to R^1 ; a much smaller black terminal patch (large spot) on M^1 ; fringe white, slightly encroached upon by the two black patches.

Fore wing beneath with the orange basal patch rather larger; the white ground-colour more extended in posterior part of wing, absorbing the black prong between the two posterior teeth and a great part of the black hind-marginal border (which, however, remains slightly greyish by transparency). Hind wing beneath as above, but with a very small orange costal patch at base.

Belgian Congo: Itoa River, Ituri Forest, Congo-Semliki Watershed, January, 1920. (T. A. Barns.)

Belongs to the group of *octogesa* Druce (Proc. Zool. Soc. Lond. 1887, p. 672, t. 55, f. 1, Cameroons), *flavibasis* Warr. (Nov. Zool. iv., 241, Cameroons), *incisa* Holl. (Ent. News, iv., 60, Gaboon), and *meliorata* Prout (Nov. Zool. xxii, 372, Gaboon), which may possibly, when sufficient material is available for study, prove forms of one protean species.

19. *Ereunetea acrogyra* sp. nov. (pl. XVIII, figs. 3, 4).

♀, 34 mm.

Head deep flesh-colour. Palpus with inner side paler, terminal joint blackish. Antenna black. Thorax above grey with a tinge of flesh-colour, beneath more flesh-colour. Abdomen above mostly orange, on sides grey mixed with flesh-colour, beneath paler. Legs predominantly grey.

Fore wing orange, with costal margin grey, broadly (reaching SC) for basal two-fifths, then very narrowly; apical area broadly black, at costa reaching from apex inwards for nearly 8 mm., at tornus terminating in a point at SM²; its proximal edge shallowly concave between DC and M²; fringe grey.

Hind wing orange, with the black apical patch small, roundish-oval, reaching only from apex to radial fold, at its broadest point (between SC² and R¹) only measuring 3 mm. across; fringe paler orange, grey-mixed opposite the apical patch.

Fore wing beneath orange, with the grey costal border bounded by C, the apical patch predominantly purplish, bounded proximally by a rather narrow deep-black band which arises behind DC¹ and R¹, continues (though tapering to a point) to SM² and is more deeply concave in middle than the boundary of the black patch of upperside, leaving free the base of cellules 3 and 4 (the latter, however, black-dotted). Hind wing beneath only orange at abdominal margin, otherwise grey (with slight fleshy admixture) proximally, rosy-purplish distally, with a breadth of 4 mm. at costa, decreasing to less than 2 mm. posteriorly; a more rosy line or narrow shade at proximal edge of this border shows an outward bend behind R¹ analogous to the bend of the black band of fore wing; a small blackish celldot, which is also, on close observation, traceable on upper surface.

Mkoma Mountains, S. Urindi District, E. Tanganyika, 1,600 m., July, 1919. (T. A. Barns.)

Nearest to *orientalis* Prout (Nov. Zool. xxii, 370), which has, in rare aberrations, the apical patch of the hind wing equally short, but

in that case far narrower—almost linear—and which further differs in having the cellspot of the hind wing always sharply marked above, the underside of the hind wing less purple distally.

20. *Amnemopsyche charmione lufira* Prout.

Ann. & Mag. Nat. Hist. (9) v. 292 (1920).

We figure on pl. XVIII, fig. 1, the type ♂ of this already described subspecies, which was discovered by Mr. Barns on the Lufira River in February-April, 1919. Five ♂♂ and one ♀ were taken.

21. *Zamarada hero* sp. nov. (pl. XVIII, fig. 23).

♂, 30 mm.

Head pale ochreous-brown with dark irroration. Antenna pectinate to a little beyond middle, with moderate branches; pale brown, with dark spots. Thorax above violet-grey with brown irroration. Abdomen above with the brown preponderating; first segment with a white spot; third and fourth with very pale yellowish ones. Body beneath, with legs, pale yellowish-brown. Abdomen beneath anteriorly hairy; hind femur with longish light hair, tibia short and thick, with long dense hair-tuft predominantly blackish, posteriorly becoming pale and less long.

Fore wing elongate (nearly as in *melpomene* Oberth., Et. Lep. vi., t. 152, fig. 1460); pale subdiaphanous green, almost free from dark speckling, except on a part of hind margin; costal margin brown, with metallic blue-grey irroration, which is strongest proximally; celldot small; distal border 4.5 mm. wide anteriorly, 2 mm. at M¹, the sinus obliquely bounded from R³ to near M¹ and curving so gently posteriorly as to form no appreciable angle at M²; the proximal boundary-line black, very finely edged proximally with yellow and distally edged with metallic-bluish irroration; border largely violaceous, at apex paler and browner, at distal margin posteriorly with ill-defined spots of the same; subterminal line yellowish-white, broad and deeply dentate from SC⁴ to R³, then obsolete, reappearing behind M² as a broad subtornal streak, similar to that of *melpomene*; bright red-brown triangles and line proximal to the subterminal; terminal line fine, black; fringe ochreous, with dark spots opposite the veins. Hind wing similar.

Underside with costal margins brighter ochreous-brown, distal borders wholly blackish, only with a small pale apical spot on fore wing; the yellow line proximally to the border rather thicker and

paler; celldot of fore wing rather longer than above; fringes as above.

Congo River, below Lisala, May, 1920. Attracted to lamp. (T. A. Barns.)

22. *Zamarada enippe* sp. nov. (pl. XVIII, fig. 24).

♂, 34 mm.

Head ochreous, mixed (especially on face and palpus) with red-brown. Antenna bipectinate for well under one-half its length, the branches moderate; pale ochreous, the pectinations spotted with black-grey. Thorax and abdomen above violet-grey, the latter with small pale ochreous-brown mediodorsal spot; beneath, with anal tuft, ochreous-brown. Middle and hind legs rather paler; hind tibia dilated, with a groove enclosing a strong blackish hair-tuft.

Fore wing translucent green, slightly paler than *translucida* Moore; costal margin bright golden-ochreous, with metallic leaden spots and dots; abdominal margin with some grey suffusion to near the outer line, continuing anteriorly as lines of very weak (and progressively weaker) irroration as far as M and M², on which they form a few dark dots; no cell-mark; distal border about 4 mm. wide from costa to R², little over 1 mm. in middle, 3 to 2 mm. posteriorly, chocolate slightly mixed with violet-grey and bearing anteriorly and posteriorly deep black spots proximally to the subterminal, the three between SC⁴ and R² largest, sharply triangular, the subterminal itself only indicated by some thin whitish irroration; proximal boundary line of this border deep black, very finely yellow-edged proximally, from SC⁴ to R² weakly lunulate, to R³ oblique, the following bay rather strong but with its corners slightly rounded off; fringe lighter brown, weakly chequered.

Hind wing with the border rather narrower (especially anteriorly), otherwise similar.

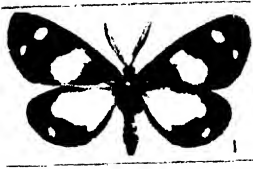
Both wings beneath with the border almost uniformly darkened with black-grey, only towards tornus of hind wing becoming paler.

Congo Belge: Kinchasa, Congo River, May, 1920. Attracted to lamp. (T. A. Barns.)

Belongs to the group of *flavicosta* Warr. (Nov. Zool. iv., 122), larger, with differently shaped borders and wanting the cellspot. Except in its much larger size it rather nearly resembles Saalmuller's figure (Lep. Madag. (2) t. xiv, f. 65) which he quite erroneously calls *reflexaria* Walk. and with which I have not yet made acquaint-

EXPLANATION OF PLATE XVIII.

- Fig. 1. *Amnemopsyche charmione lufira* ♂ .
2. *Pitthea neavi aurantifascia* ♂ .
3. *Ereunetea acrogyra* ♀ .
4. „ „ (underside).
5. *Larentia barnsi* ♂ .
6. „ *altipeta* ♀ .
7. *Xanthorhoë latissima* ♂ .
8. *Epirrhoë euthygramma* ♂ .
9. *Calostigia phiara* ♂ .
10. *Euphyia altispex* ♂ .
11. *Asthenotricha straba* ♂ .
12. *Eois oressigenes* ♀ .
13. *Pitthea sospes* ♂ .
14. *Cleora inaequipicta* ♂ .
15. *Calostigia conchulata* ♂ .
20. *Lobidiopteryx stulta* ♂ .
21. *Terina tanyeces* ♂ .
22. *Asthenotricha semidivisa euchroma* ♂ .
23. *Zamarada hero* ♂ .
24. „ *enippe* ♂ .



the strongly serrate antenna (almost simple in *kenricki*); in the ♀ by the tone of colour (the ♀ of *kenricki* agreeing with the ♂).

19. *Belciana habroscia* sp. nov. (pl. XV, fig. 3).

♀, 42 mm.

Third segment of palpus very fine and longer than in either of the preceding species (almost as long as segment 2).

Head, thorax, abdomen and legs nearly as in *B. particolor*, tegulae pale bluish-green at tips and with some blackish scales at base, not uniformly orange-brown.

Fore wing very pale blue, shaded with pale green except costal area to the subapical triangular black mark. Basal markings and orbicular much as in *kenricki*, but the subbasal band distally as well as proximally thickened to form an angle behind M; only three instead of four lines beyond the subbasal, but the white subterminal shade is distally edged by some black, arrow-like marks between the veins, the one in fold extra large, replacing the dagger-like mark of *kenricki*; reniform black mark very narrow, the upper half erect, the lower outwardly oblique (forming a strong angle).

Hind wing yellowish-white, with slight dark terminal shade, not quite reaching to termen; dark terminal lunules moderately strong.

Underside somewhat as in *particolor*, but hind wing rather paler, with the dark markings scarcely reaching to middle of wing.

Dutch New Guinea: Nomnagihé, 25 miles south of Wangaar, 2,000 feet, January-February, 1921, ♀ holotype only.

The most delicately-coloured *Belciana* species yet known to me.

20. *Belciana sophronia* sp. nov. (pl. XV, fig. 5).

♀, 41—44 mm.

Vertex of head, thorax and fore wing dull bluish-green, shaded in parts with yellowish-green, tegulae black at base, patagia banded with black at base and tips; palpus and face yellowish-white shaded with dark brown; abdomen above dull ochraceous irrorated with brown, the type with a green crest on first segment, followed by a row of very small blackish tufts (or crests, as in *Donda*); pectus, legs and abdomen beneath dull-ochraceous, shaded with brown, the fore and mid-tibia with patches of pale-green.

Fore wing marked somewhat as in *biformis* Walk., but without the

distal brown markings and with the subbasal brown patch reduced to a triangular mark at costa and an irregularly-triangular spot in base of fold; all the lines blacker than in *biformis*, the medial more continuous; additional very fine black lines intersecting the green areas on each side of the medial line, arising from the spots usually present on the costa of *biformis*; some black streaks on the veins towards termen.

Hind wing somewhat as in *biformis*, but rather paler at base, with the postmedial line less angled towards anal angle and with an additional (medial) straight, diffused, slight brown band.

Underside of wings rather greyer in tone than in *biformis*, with the postmedial line rather more angled behind costa of both wings and with a better developed medial shade on hind wing.

S.W. Sumatra: Slopes of Mount Korintji, 7,300 feet, August-September, 1921, ♀ holotype. Also one ♀ from North Korintji Valley, 5,000 feet, September-October, 1921.

21. *Belciana subserrata* sp. nov. (pl. XV, fig. 7).

♂, 55 mm.

Palpus yellowish-white, shaded with green and brown; head pale-green; tegulae brownish-orange, tipped with green; thorax dull yellowish-green; abdomen (discoloured) apparently yellowish, the first abdominal crest large, deep reddish-brown, the other crests small and black; abdomen beneath, pectus and legs ochraceous-yellow, more or less shaded with brown, the fore- and mid-tibia with small patches of green.

Fore wing dull yellowish-green, marked nearly as in *B. serrata* Beth.-Bak. (*Diptheroides serrata* Beth.-Bak., *Nov. Zool.*, xiii, 204 [1906] [Brit. New Guinea]), but without the heavy black subbasal and subapical shading, which is almost always a strongly-marked feature in *serrata*; medial and postmedial lines less dentate than in *serrata*; subterminal dart-like mark very slight; fringe very narrowly chequered with black.

Hind wing coloured as in *serrata*, but the dark border ending (on anterior half of wing) at postmedial line, and showing a slight pale line on distal side of postmedial; the yellow shade slightly deeper in tone than in the majority of *serrata* specimens.

Underside somewhat as in *serrata*, but proximally deeper yellow, with the dark markings rather more diffused and obscure; termen of fore wing rather more broadly pale-green; dark border of hind wing not interrupted by terminal pale spots.

Dutch New Guinea: Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, November-December, 1920, ♂ holotype only.

Undoubtedly nearest to *B. serrata*, but seems to differ in too many points to be conceivably only an aberration of that (apparently) very constant species.

22. *Serrodus mediopallens* sp. nov. (pl. XV, fig. 2).

♂, 78 mm.

Antenna and palpus nearly as in *S. campana* Gn. ("Spec. Gén. Lép.," vii, 252 [1852] [Silhet], but antennal shaft less strongly thickened at base, and segment 2 of palpus rather less broadly scaled at middle; legs apparently as in *campana* (condition not perfect); margins (especially of fore wing) less strongly serrate than in *campana*.

Head, thorax and abdomen brownish-grey, with pectus a little paler and thorax above darker and more purplish; anal tuft white.

Fore wing with base and termen slate-purple; medial area ochraceous finely irrorated (especially proximally and posteriorly) with pale red-brown but almost without dark irroration; base of wing marked almost exactly as in *campana*; an orbicular black dot; reniform finely defined by red-brown, with slight brown line in centre, narrow, constricted at middle; a slight brown mark at origin of postmedial line, which is bent outward behind costa and coloured as in *campana*, but is strongly and nearly evenly incurved from the areole to hindmargin; terminal third of wing nearly as in *campana*, but distal shading to postmedial line stronger (broader beyond cell), terminal shading weaker.

Hind wing as in *campana* but with basal woolly hair apparently a trifle thicker.

Underside of both wings much as in *campana*.

Dutch New Guinea: Nomnagihé, 25 miles south of Wangaar, south Geelvink Bay, 2,000 feet, January-February, 1921, ♂ holotype only.

Easily distinguished from other *Serrodus* species by the strongly contrasted medial area and the curved postmedial line.

23. *Athyra rhynchophora* sp. nov. (pl. XV, fig. 10).

♂, 47 mm.

Antenna bipectinate to about five-sixths shaft, the pectinations ending in bristles, as in *pratti* Beth.-Bak. (*Hypaetra pratti* Beth.-Bak., Nov. Zool. xiii, 262 [1906] [Brit. New Guinea]), but longer than in

that species; palpus nearly as in *A. bubo* Hbn. (Zutr., 633, 634; iv, B [1832] [Java]).

Head, palpus and thorax shining violet-grey mixed with brown, abdomen above and beneath greyish-brown; pectus and legs predominantly dark-brown with a few violet scales and some paler brown hair.

Fore wing violet-grey with an oblique pale medial band shaded with pale olive-green. Scheme of pattern much as in *A. pratti*, but with the subbasal posterior dark patch distally and posteriorly incised, with a reddish-orange shade behind it along hindmargin to beyond middle of wing, the medial pale band showing two distinct waved lines on it (besides one at its distal edge), the postmedial dark patch beyond cell cut into on its proximal side by a pale tooth, much as is *bubo* and *perficiens* (*Hypactra perficiens* Walk., xiv, 1412 [1858] [South India]); a dark erect waved subterminal line; the medial pale band rather less oblique than in *pratti*, though more oblique than in *bubo* and *perficiens*.

Hind wing much as in *pratti*.

Underside grey-brown tinged with silvery-blue (paler than in *pratti*), both wings with a straight postmedial line, obsolescent on fore wing, better defined on hind wing, with slight thickening in folds; pale shading on distal half of costa of fore wing and white cell-spot on hind wing as in *pratti*.

Dutch New Guinea: Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, December, 1920 to January, 1921, two ♂♂.

24. *Athyra eupepla* sp. nov. (pl. XV, fig. 9).

♂, 58 mm.

Antenna with moderate bipectinations ending in bristles to about three-fourths, the apical fourth with short bristles; segment 2 of palpus about $3\frac{1}{2}$ mm., segment 3 about 2 mm.; mid and hind tibia clothed with very thick tufts of long hair, covering half first joint of tarsus; neurulation and shape of wings much as in *A. bubo* Hbn., but hind wing more crenulate and rather less flattened between SC^5 and M^2 ; termen of fore wing perhaps a trifle more rounded.

Antennal shaft, head and thorax purplish-grey; abdomen, pectus and legs predominantly greyish-brown, the tarsi ringed with pale-ochraceous; palpus pale-ochraceous on inner side and beneath, purplish-grey on outer side and above.

Fore wing purplish-grey with an oblique pale medial band, washed anteriorly with pink, posteriorly with green. Black basal dots on

costa and M; subbasal and postmedial glossy black patches, as in most *Athyra* species, the basal one triangular, distally and posteriorly indented, connected with costa by a broad black streak; medial band much more oblique than in *bubo* and less conspicuously pale, the double brown lines at its distal edge angled inward at M and broadly excurved behind costa and M; a postmedial black bar at costa, not reaching the black patch, which is shaped somewhat as in *bubo* but is larger, less proximally indented and continued to a point at middle of fold; wing before and behind the postmedial patch tinged with reddish; an ill-defined, very irregularly dentate subterminal line and terminal dark shading somewhat as in *bubo*.

Hind wing fuscous with traces of a subterminal dark line towards tornus.

Underside of both wings greyish-fuscous, the hind wing with white cell-dot and slight dark postmedial line, angled behind R^1 .

♀, 56 mm.

Antenna almost simple; hair on tibia shorter than in the ♂; segment 2 of palpus about 3 mm., segment 3 about $2\frac{1}{2}$ mm. Fore wing slightly more richly coloured than in the ♂, with the postmedial dark patch reduced on distal side (more as in *bubo*); hind wing and underside much as in the ♂. Anal tuft of abdomen beneath deep orange.

South-West Sumatra: North Korintji Valley, 5,000 feet, September-October, 1921, one ♂, one ♀; slopes of Mount Korintji, 7,300 feet, August-September, 1921, three ♀ ♀.

25. *Eumaenas salaminia* F. *nigricilia* subsp. nov.

♂, 86 mm.; ♀, 84 mm.

Head, body above and fore wing much as in typical *salaminia* F. (*Noctua salaminia* F., *Ent. Syst.*, iii, 2, p. 17 [1794] [E. India]), but the green tones rather darker, more olivaceous, and the green shading at base and along costa of fore wing rather broader, leaving only a very narrow pale edge to the deep-green area.

Hind wing with the black border starting from about three-fifths costa and gradually narrowing to just before SM^2 , slightly angled inward on and outward behind M^2 , not otherwise waved or dentate though somewhat curved; the black patch behind middle of wing starting from M^1 or scarcely before it (not from R^3 as in typical specimens) and much

broadened, having the distal edge almost straight, not strongly angled in as in *salaminia salaminia*.

Underside of abdomen dark-brown, not whitish as in Indian specimens. Fore wing with the yellow basal patch proximally reduced (the division of yellow and black areas being less oblique), and the pale patch beyond cell reduced in size, ending in a point midway between M^1 and M^2 . Hind wing differing much as above.

Dutch New Guinea: Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, November-December, 1920, ♂ holotype, ♀ allotype.

As typical *salaminia* occurs throughout the Indo-Australian region from Ceylon and India to Queensland and the Pacific Islands, it seems probable that this is a high elevation rather than a geographical race—or possibly even a very closely allied species. Typical *salaminia* is not, however, represented in coll. Joicey from Dutch New Guinea.

NOTE ON *ACHAEA PECTINICORNIS* BETH. - BAK.

BY MISS A. E. PROUT, F.E.S.

IN his paper on the "Voyage de M. Maurice de Rothschild" (Hétérocères, p. 422) Monsieur Le Cerf calls attention to the divergence between the specimen identified by me as *Achaea pectinicornis* Beth.-Bak. (*Ophiusa pectinicornis* Beth.-Bak., *A.M.N.H.*, 8, III, 462, 1909, Congo F.S.), and the typical specimen as figured by Sir G. Hampson in *Cat. Lep. Phal.*, XII, p. 497. It may perhaps help in the elucidation of this species if I add a further note to what Monsieur Le Cerf has said.

Unfortunately, I have not had access to the type of this species, so that the determination can be only provisional; especially as the five ♂♂ and one ♀ in coll. Joicey appear to have the mid-tibia non-spinous. A descaled ♂ mid-tibia shows no sign of any spines. But amongst the removed scales are a number of dark, pointed bristles (or *exceedingly* fine and easily detached spines), which probably misled Sir G. Hampson into regarding the mid-tibia as spinous; a mistake the more easily made as the underside in this species is typically that of the genus *Achaea*. Unless the drawings in *Cat. Lep. Phal.* (like that of the palpus) are entirely incorrect, it is probably these bristles which the artist has depicted as spines. The specimens in coll. Joicey (from Sierra Leone, Congo River, British East Africa, and three without data) vary considerably, some being almost identical with the form figured in *Cat. Lep. Phal.*, some nearer to that figured by Monsieur Le Cerf; but allowing for this variability, they agree perfectly with the figure and description in *Cat. Lep. Phal.* The palpus is always as in Monsieur Le Cerf's figure (6A, II), not as figured by Hampson; but it will be noticed that Hampson distinctly says in his text "third joint *long*" and that it is so drawn in the figure of complete insect, so that the drawing of head in the dissection is presumably in error. The frontal tuft appears to wear very quickly. In the five ♂♂ in coll. Joicey the antennal pectinations are as in the specimen figured by Monsieur Le Cerf, not as drawn in *Cat. Lep. Phal.* In the complete figure here, however, the tip of the shaft appears to be missing, which may partly account for the discrepancy.

THREE NEW CATOCALINAE, WITH A DESCRIPTION OF THE FEMALE OF *CALLIODES APPOLLINA*, GN.

By Miss A. E. PROUT, F.E.S.

Plate X.

1. *Catocala thomsoni* sp. nov. (pl. XXII, fig. 1).

♂ ♀, 56—63 mm.

Head, palpus, antenna and thorax nearly as in *C. deuteronympha* Stgr. (Stett. Ent. Zeit., 1861, p. 290 [E. Siberia]), but the third segment of palpus appreciably shorter than in ♂ and ♀ of *deuteronympha* in coll. Brit. Mus.; apparently also a trifle thicker and blunter at the tip in *thomsoni*; the patagia with a broad dark band at the middle, but with scarcely any trace of dark shading at the tips. Pectus, legs and abdomen much as in *deuteronympha*.

Fore wing appreciably shorter and broader than in *deuteronympha*. Differs from that species also in the more prolonged darkening of R^2 beyond the reniform, in the absence of dark shading on the pale sinus of postmedial line behind reniform and in the dark shading distally to the postmedial and subterminal lines being weaker and more ochraceous in tone than in *deuteronympha*.

On the hind wing *thomsoni* differs from *deuteronympha* in having the dark hair in the fold much slighter (sometimes hardly present), the terminal black band slightly narrower at the radials and the medial band much narrower.

The underside of the fore wing in *thomsoni* has the antemedial half-band a little straighter and less oblique than in *deuteronympha* and the terminal band usually ending just behind M^2 in the ♂. The hind wing is more uniform yellow in *thomsoni*, except for some deeper golden scaling on proximal half of wing from middle of cell to middle of fold; the medial band narrower than in *deuteronympha*, obsolescent at costa; the cell-spot reduced to a point; terminal dark band very slight, leaving a distinct yellow band at termen with only very slight dark irroration.

North China: Tientsin, June, 1922 (F. M. Thomson), six ♂♂, one ♀.

Nearest to *C. deuteronympha*, of which it might well be a local race were it not for the structural difference in palpus and shape of fore wing.

2. *Catocala jansseni* sp. nov. (pl. XXII, fig. 2).

♀, 58 mm.

Differs from *C. triphaenoides* Ob. ("Et. Ent.," vi, p. 21, pl. viii, f. 5 [1881] [North China]), in the following points: in *jansseni* the antemedial line is (apparently) more oblique, with proximal dark suffusion (broad at costa narrowing to hind margin), bidentate behind M; postmedial line much more dentate than in *triphaenoides*, with long black teeth behind R¹ and R² and the proximal end of sinus bidentate; subterminal line sharply defined and strongly dentate; a patch of dark suffusion from about two-fifths to four-fifths costa, extending to behind reniform; termen with dark streaks behind SC³, R¹, and R².

Hind wing with slight black mark on origin of SC³ and R¹; the terminal spots before and behind SM² large, coalescent, forming a V-shaped mark.

Fore wing beneath with large black patch in base of fold, postmedial black band from origin of R¹ to hind margin near tornus, almost continuous with a broad irregular black costal patch; the terminal band extending to tornus and without the pale shade at termen.

Hind wing with bidentate black bar at middle of costa; the terminal band slight to M²; a slight black streak on SM².

Central China: Ichang, June, 1922 (C. T. Bowring), ♀ —allotype only.

As both fore and hind tibia in this specimen are unfortunately wanting, it is impossible to say with certainty whether this species is a *Catocala* or an *Ephesia*. It appears nearest to *Ephesia triphaenoides* Ob., and *E. vallantini* Ob. ("Et. Ent.," xix, p. 36, pl. vi, fig. 53 [1894] [Algeria]), both of which species lack the medial black band on the hind wing. As, however, there seems a doubt as to the validity of *Ephesia*, I prefer to employ the old, universally accepted generic name *Catocala*.

At the suggestion of Mr. Bowring I dedicate this species to Père Janssen, who assisted him materially in his collecting at Ichang.

3. *Calliodes appollina* Gn.

"Spec. Gén. Lép.," vii, 193 (1852) (Senegal) (♂).

♀, 38—40 mm.

Antenna serrate, each serration bearing a long curved bristle and a fasciculate tuft of cilia.

Wings with the lines brownish, scarcely tinged with "metallic violet."

Differs in the following points from Hampson's description of *appollina*, probably taken from the Abyssinian specimen in coll. Brit. Mus.

Wings hardly "suffused with reddish-brown." Fore wing with the costa scarcely darkened except on basal and apical fourths. Termen of both wings and medial part of costa of fore wing deeper ochraceous than the ground-colour. Hind wing with the subterminal lines more or less broken into spots. Wings beneath with the termen ochraceous, not "red-brown." Fore wing with a more or less well-developed post-medial line, one specimen also showing three dark spots at the head of inverted comma mark.

Senegal: Kaolack, two ♀♀.

The smaller specimen, which bears the dark comma-head spots beneath, has the antenna almost without bristles and with but little ciliation; but this appears to be due to damage, the form of the shaft agreeing with that of the other specimen, which is in much fresher condition.

This ♀ does not appear to have been previously described.

4. *Calliodes barnsi* sp. nov.

Figured in "Across the Great Craterland to the Congo," T. A. Barns, pl. lxxxi, fig. 10, 1923.

♀, 47 mm.

Antenna nearly as in the ♂ of *C. pretiosissima* Holl. (*Ent.*, xxv, Supp., p. 94 [1892] [E. Africa]), the pectinations (erroneously called by Hampson "serrations") slightly shorter but much more strongly developed than in the ♀ of *appollina* Gn., which in other respects this species most nearly resembles.

Head, thorax, abdomen and legs nearly as in *appollina*.

Fore wing much as in *appollina*, but the yellowish-white tone of ground-colour a little deeper; the subterminal white line tinged with

ance in nature; the figure, however, shows the presence of small cell-dots, and less yellow costa and slightly narrower borders, which widen rather than narrow at tornus.

23. *Zamarada acosmeta* sp. nov. (Text fig. 16).



16. *Zamarada acosmeta* ♀.

♀, 30—32 mm.

Head light brown, the face, vertex and base of antenna more or less strongly mixed with red-brown; palpus, excepting the first joint, somewhat dark-spotted. Thorax and abdomen very pale ochreous-grey with a tinge of green (especially dorsally); metathorax and abdomen with ill-defined reddish dorsal stripe or row of spots.

Fore wing very pale translucent-green, the wing-membrane showing violet reflections; grey irroration coarse but not very dense, mostly arranged so as vaguely to suggest strigulae; costal margin inclining to buff, rather heavily dark-spotted anteriorly; celldot very minute; distal border purple-grey, excessively narrow, the crenulate reddish (in part black-mixed) line which bounds it proximally almost touching the termen between the veins posteriorly to R^2 and being nowhere more than 1 mm. distant therefrom.

Hind wing similar, except costally; terminal line in anterior part less dentate proximally on veins. Under side with the buff costal margin only dark irrorated proximally; distal borders blackish, shaped as above.

East Tanganyika, Urindi District: Upper Ruvubu River, July—August, 1919 (type); Lumpungu River, Malagarassi Valley, July, 1919 (paratype).

V.—NEW HETEROCERA.

By J. JOICEY AND G. TALBOT.

Figures of these forms will be published later.

AMATIDAE.

1. *Apisa subargentea* sp. nov.

Apparently allied to *rendalli* Roths.

♀. Upperside of fore wing glossy grey, a sort of old-silver colour, without markings. Hind wing more whitish. Underside as above.

Head, thorax, and abdomen grey, abdomen slightly glossy. Antennae with shaft grey, branches yellowish-brown. Palpi dark grey, legs grey.

Length of fore wing: 16 mm.

Habitat.—Lake Tshohoa, Ruanda District, August, 1919, one ♀.

2. *Metarctia virgata* sp. nov.

Distinguished by the pale ochreous veins on the black-brown ground-colour of the fore wing.

♂. Upperside of fore wing with blackish-brown ground-colour. Veins marked with pale ochreous, costa and thin outer marginal line pale ochreous. An oblique pale ochreous streak between the lower edge of cell and submedian. A pale ochreous line from the base of cellule 6 to vein 3, angled outwards to vein 4. Hind wing grey-white with the distal area smoky-brown, the veins and a marginal line pale ochreous.

Underside of fore wing paler than above. Hind wing suffused with blackish-brown.

Antennae pale brown, shaft pale ochreous. Palpi blackish-brown, marked with pale ochreous above. Head and thorax blackish-brown, abdomen grey-brown, legs dark ochreous-brown.

Length of fore wing: 15 mm.

Habitat.—Mikeno Volcano, N. Kivu, 2,400 feet, September, 1919, two ♂♂.

3. *Metarctia ochreogaster*, sp. nov.

Allied to *rubritineata* B.-Bkr., but the ground-colour is dark ochreous-brown, the spots are differently placed and there are traces

of distal spots. The arrangement of markings is much as in *rubrovitta* Auriv.

♂. Upperside dark ochreous-brown. Fore wing with crimson markings; a stripe below costa from base to near apex, a discoidal spot, a spot in middle of cell, a smaller spot in base of cellule 6, two indistinct spots in bases of cellules 3 and 4, a well-marked spot below base of vein 2, an indistinct series of submarginal spots formed of scattered crimson scaling, a dot at base of submedian. Hind wing without markings.

Underside paler with some spots faintly showing through.

Head, thorax, and abdomen dark ochreous-brown. Antennae yellowish-brown. Palpi dark ochreous-brown, crimson at sides. Frons edged with crimson. Eyes edged with crimson. Legs ochreous, femora crimson above, tibiae black above. Ventral surface of abdomen ochreous.

Length of fore wing: 16 mm.

Habitat.—Ituri Forest, N.W. Beni, January, 1920, two ♂♂ (type); Semliki Forest, E. Semliki Valley, Ruwenzori, December, 1919, one ♂.

ARCTIIDAE.

4. *Spilosoma rufa* sp. nov.

Allied to *melanodisca* Hmps. but antennae more broadly pectinate, a larger insect, and differently coloured.

♂. Upperside reddish-orange. Fore wing with lines marked by indistinct black points on the veins. A subbasal angled line, a discal line paralleled to it, a postdiscal line, a marginal line. All these lines are indistinctly indicated by black points, and in the paratype are not visible, there remaining only 6 black points. Hind wing tinged with crimson. A black discoidal spot and some black submarginal marks including two well-marked anal spots.

Underside ochreous faintly washed with crimson. Fore wing with a black discoidal streak and costa with some brown scaling. Hind wing with blackish scaling at base of costa, a black discoidal streak, and traces of the submarginal marks above.

Head and thorax ochreous; antennae grey-white; palpi ochreous; femora ochreous, crimson above; tibiae and tarsi dark brown tinged with crimson; abdomen pale crimson with small black dorsal spots on segments 6—8.

Length of fore wing: 17 mm.

Habitat.—Kissenji River, Lake Kivu, September, 1919, one ♂ (type); Mikenso Forest, Kivu, 2,000 m., October, 1919, one ♂.

5. *Maenas nigrilinea* sp. nov.

Unlike any other known African species.

♀. Upperside of fore wing pale buff, with brownish-black stripes between the veins. An interrupted cell-stripe along upper margin, the proximal half thinner than distal half; a short triangular stripe in base of cellule 6; a subapical spot from costa to below vein 7; a short stripe on vein 6; a little scaling below vein 5; stripe along 4 filling base of cellule 4, extending along 3, filling base of 3, extending along margin of cell and two-thirds along vein 2, thence below this along edge of cell half-way between 2 and the base; a long stripe above submedian, not reaching base nor tornus; a series of black marginal dots between the veins. Hind wing pure white without markings.

Underside paler. Fore wing with markings showing through, costa edged with orange.

Head and thorax pale buff. Antennae white above, black beneath. Tegulae edged with orange behind. Shoulders with a black spot. Patagia with a black spot pointed behind. Palpi pale buff, orange beneath, and black at sides. Abdomen with basal white hair, orange above, pale buff beneath with two rows of black lateral dots; anal tuft pale buff.

Length of fore wing: 21 mm.

Habitat.—Niansa, Ruanda District, August, 1919, one ♀.

6. *Maenas paucipuncta* sp. nov.

Allied to *affinis* Roths., but differs in the unspotted abdomen and differently-spotted fore wing.

♂. Upperside pure white. Fore wing with a slight yellowish tinge, more marked along costa, which is edged with orange, and inner margin. A small elongate black dot in cell at base, a black dot at upper and one at lower angle of cell, a black point on costa beyond cell, black dots in pairs on veins 2-4 and one on the submedian forming a post-discal line incurved at vein 2, a dot on vein 2 beyond its base, a larger black dot below it on submedian. Hind wing without markings. Underside with dots of the fore wing showing through.

Head and thorax white with yellow tinge. Antennae black, shaft white above. Palpi yellowish-brown, black at sides. Tegulae edged

with orange behind. Abdomen orange above with white hair at base, ventral surface white with yellow tinge. Legs white, tarsi marked with black, fore femora orange above.

Length of fore wing: 16 mm.

Habitat.—Akanjaru River, Ruanda District, August, 1919, one ♂.

AGARISTIDAE.

7. *Mitophrys barnsi* sp. nov.

Allied to *latreillei* H.S., but has larger spots and is distinguished by a yellow submarginal dotted line.

♂. Upperside of fore wing with maroon-brown ground-colour and pale ochreous patches edged with black. Costa and basal two-thirds of inner margin black. A small basal spot, a spot in basal part of cell; a larger quadrate spot near end of cell; a basal stripe entering base of cell; a large submedian patch, its lower edge touching submedian, its upper edge touching vein 2, and narrowly separated from the basal stripe by its black outer edge, the upper part of which is oblique; a small oblong spot on the black distal edge of the large spot; a broad oblique subapical band from below costa to a little below vein 3, its lower part directed outwards to near the margin and somewhat rounded at the end, at the middle slightly constricted; a faint yellow short subapical line invading the black anterior edge of the band; a submarginal dotted yellow line, formed of five dots anteriorly, some scattered scales round the end of the band, and two indistinct dots in a black patch at the tornus; a bluish mark in the middle of cell, a bluish discocellular mark, a bluish dot below base of vein 2, a bluish line distally of the submedian patch, and a marginal series of purplish-blue spots. Fringes pale ochreous.

Hind wing orange with a broad black distal border and a large black discocellular spot. Fringes black on inner half, outer half ochreous.

Underside with maroon-brown ground-colour. Fore wing with basal half yellow and bearing a spot of ground-colour in base of cellule 2 with a quadrate spot in cell above it, separated by vein. A yellow subapical band as above. Hind wing as above, distal border maroon-brown.

Antennae, head and thorax black. Palpi black fringed with orange hair below; frons white at sides; tegulae with four white stripes; patagia fringed with orange on inside and with an orange basal spot.

Abdomen orange with black dorsal spots. Femora and greater part of tibiae orange, rest of legs black.

Length of fore wing: 23 mm.

Habitat.—Lufira River, near Likasi Copper Mine, 4,000 feet, 6 December, 1918, one ♂.

LYMANTRIIDAE.

8. *Laelia conjunctifascia* sp. nov.

Allied to *ansorgei* Roths.

♂. Upperside with chrome-yellow ground-colour. Fore wing with blackish bands of white black-tipped scales, the spaces between forming narrow bands of ground-colour washed with brick-red. Basal third black excepting a spot of ground-colour at base of inner margin, a brick-red basal spot below cell, and a brick-red costal spot. Discal and postdiscal black bands fused together and bearing brick-red spots on the submedian, on the angle of 4 and 5, and on 6, with a mark on the discocellulars. A row of marginal black spots, the apical one elongate, the others increasing in size posteriorly. The basal and distal black areas separated by a curved narrow band washed with brick-red, a similar band separating the postdiscal band from the marginal spots, strongly angled outwards at vein 7. Costa brick-red near the apex.

Hind wing slightly washed with brick-red, and bearing traces of black submarginal spots.

Underside chrome-yellow, fore wing suffused with black in the distal half, hind wing with blackish submarginal spots in cellules 2-6.

♀. Extended brick-red on both wings. Fore wing with postdiscal band separated from the discal and with a large loop. Hind wing without markings.

Antennae black. Head and thorax chrome-yellow washed with brick-red. Abdomen chrome-yellow with black dorsal bands. Femora and tibiae chrome-yellow, tarsi blackish-brown. Palpi chrome-yellow, third segment blackish-brown.

Length of fore wing: ♂ 21 mm.

Habitat.—Kassaka River, Malagarassi Valley, E. Tanganyika, July, 1919, one ♂.

♀ in B. M. from Solwezi, N. E. Rhodesia, October 26, 1917, H. C. Dollman. Distinguished from *ansorgei* by the discal and postdiscal bands being broader and merged together, and by the paler underside with extended costal and apical grey-black on the fore wing.

HYPSIDAE.

9. *Phaegorista prouti* sp. nov.

Allied to *agaristoides* Bdv. but distinguished from this and other species by the red basal area on the fore wing and the more distally placed subapical band.

♂. Upperside with general markings of the allied form. Fore wing with red basal area extending into the base of cellule 2, with a broad stripe in the cell and a narrow costal streak. Subapical white band, not crossing vein 3 and at a distance of about 3 mm. from end of cell. A small white spot near tornus. Fringes not white at apex but dotted with white throughout. Hind wing as in allied form but with black margin slightly narrower, distal half of vein 2 streaked with black, and some black scaling above the base of vein 3 forming a small discal spot.

Underside as above. Fore wing with whole basal area red, leaving the costa narrowly black.

Body and appendages coloured as in allied form, except that the thorax below is red.

Size as in allied form.

Habitat.—Lufira Valley, November—December, 1918, one ♂.

SATURNIIDAE.

10. *Pseudaphelia basiflava* sp. nov.

♂. Upperside brownish-black, thinly scaled as in allied forms. Fore wing with a yellow spot on the lower discocellular. Slight yellow scaling in the cell, on costa above it, and in the submedian area. Hind wing with basal half pale-yellow, including the discocellulars, the bases of cellules 2, 4, 5 and 6, and slightly the base of 3.

Underside very pale yellow with apex and outer margin of fore wing and distal half of hind wing brownish. Both wings with a yellow spot on the lower discocellular.

Antennae black. Head yellow; tegulae brownish-black fringed with yellow hair below. Abdomen brownish-black ringed with yellow; anal tuft yellow. Legs brownish-black, tibiae fringed with yellow hair on the inside.

Length of fore wing: 36 mm.

Habitat.—North side of the Maiko (or Oiko) Valley, near Stanleyville, May, 1920, one ♂.

11. *Eudaemonia argiphontes barnsi* subsp. nov.

Distinguished from the typical West African form by its large size and darker colour.

♂. Upperside with darker brown ground-colour. Fore wing with postdiscal band curved in its anterior part and parallel with outer margin between costa and vein 5. Subbasal band with inner edge more strongly pink in its posterior half. Hind wing with the rounded spots placed farther from the postdiscal band.

Underside of fore wing with submarginal line farther from the margin and ending posteriorly straight from vein 2 to the margin close to the postdiscal line. Hind wing with postdiscal line bordered by a heavier dark band on its inside.

Length of fore wing: 40 mm.; in a large specimen of the typical form this measures 33 mm.

Habitat.—E. Epulu River, N. Ituri Valley, between Penghe and Irumu, 700 m., March, one ♂. Disturbed in dense forest at midday.

Mr. Barns notes that on April 9 another of these moths was observed by his wife between the Lindi and Ituri Rivers. This was about 11 a.m. and the specimen had a "quick and lively flight."

LIMACODIDAE.

12. *Thosea rufimacula* sp. nov.

Distinguished by the black fore wing, bearing a reddish-brown spot near the tornus, and smoky-brown hind wing.

♀. Upperside of fore wing with black ground-colour, for the greater part overlaid with bluish-white scales. A subbasal brown line, a discal brown line, and a postdiscal brown line, all heavily marked posteriorly; a second postdiscal brown line from costa to vein 4; a black submarginal band to vein 4, with 3 short proximal oblique branches; a tawny patch between veins 2 and 4 at tornus; a black marginal line becoming indistinct posteriorly where it meets the end of the submarginal line above the tawny patch. Hind wing smoky-brown. Underside smoky-brown.

Antennae, palpi, and head chocolate-brown. Thorax and abdomen deep chesnut-brown. Legs chestnut-brown mixed with grey.

Length of fore wing: 14 mm.

Habitat.—Lufira River, near Likasi Copper Mine, 4,000 feet, November 30, 1915, one ♀.

In the B.M. from Kola Valley, Port. E. Africa, April 5, 1913, S. A. Neave, one ♀.

URANIIDAE.

13. *Epiplema costilinea* sp. nov.

Distinguished by its grey colour and the hind wing possessing a yellowish subapical line from the costa at right angles.

♀. Upperside grey strongly irrorated with blackish-brown. Fore wing paler in the apical half. A postdiscal yellowish line edged with black on the inside, its upper part at right angles to the costa, strongly angled at vein 4, and thence indistinct to the inner margin. A dark sub-marginal spot at vein 5, a discoidal spot, and an ill-defined blackish patch at the tornus. Hind wing with a faint basal, discal, postdiscal, and submarginal line. Postdiscal line with upper half as on fore wing and reaching to vein 4, not discernible beyond this. A submarginal black line.

Underside paler than above and only slightly irrorated with black.

Antennae yellowish-brown. Palpi black above, grey-brown below. Head, thorax, legs and abdomen grey.

Length of fore wing: 15 mm.

Habitat.—Mugowosi River, Malagarassi Valley, Udjiji District, July, 1919, one ♀.

In B.M. from Bukasa, Uganda, October 27, E. A. Minchin, one ♂.

ZYGAENIDAE.

14. *Netrocera jordani* sp. nov.

Allied to *setioides* Feld. and *ugandae* Jord., connecting these two forms. Distinguished from *setioides* by the black discal stripe on the fore wing.

♂. Upperside of fore wing with dark yellow ground-colour. Cell blue-black with sparse scaling of the same colour between the veins. Submedian area blue-black with a narrow or broad stripe of ground-colour on the submedian. Costa at apex, outer and inner margins blue-black, broadening below vein 3. Hind wing bright yellow with a blue-black margin narrowing to the submedian fold. Fringes black.

Underside as above but ground-colour of the fore wing brighter yellow.

Antennae, head, palpi, thorax, legs and abdomen blue-black. Tegulae fringed with yellow hair; patagia with a yellow stripe down the middle.

Length of fore wing: 12 mm.

Habitat.—Kabati, Lake Kivu, October, 1919, two ♂♂.

15. *Pedoptila nigrocristata* sp. nov.

Allied to *catori* B.-Bkr., but distinguished by the black anal tuft.

♀. Fore wing with upper discocellular as long as the middle one, more oblique than in other species and scarcely angled at vein 6. The basal yellow area is broader costally than in *catori* and its outer edge is concave.

Hind wing as in *catori*, but the tail is black and not fringed with whitish as in that species.

Body and appendages as in *catori*, but with the difference that the frons is black, the tarsi are black, and the anal tuft is blackish-brown.

Length of fore wing: 14 mm.

Habitat.—Chambezi River, N. E. Rhodesia, April, 1917, one ♀.

16. *Semioptila lufirensis* sp. nov.

Allied to *hilaris* Rebel and *flavidiscata* Hmps. Resembles the latter in general appearance, but the two submedian veins of the fore wing are strongly marked, as in *hilaris*.

♂. Fore wing with cell-streak not reaching end of cell and not touching the discocellular spot. Cellule 1b is not entirely filled in with yellow, the angle formed by the junction of submedian and the margin being of the ground-colour. Cellule 1c yellow in the basal half. The allied forms have 1a-1c entirely yellow. Hind wing larger than in the allied forms and with a longer and more spatulate tail, which is broader than in any other species.

Abdomen hairy as in *hilaris*, more so than in *flavidiscata*.

Length of fore wing: 15 mm.

Habitat.—Lufira River, near Likasi Copper Mine, 4,000 feet, September 30, 1918, five ♂♂.

V.—DESCRIPTIONS OF NEW FORMS OF LEPIDOPTERA FROM THE ISLAND OF HAINAN.

BY J. J. JOICEY AND G. TALBOT.

THE forms here described were sent to the Hill Museum by C. T. Bowring, Esq., F.E.S., who, whilst residing on Hainan, spared neither trouble nor expense in obtaining specimens from all parts of the island.

We have to acknowledge our great indebtedness to Mr. Bowring for his generosity in presenting to the Hill Museum the bulk of the specimens obtained by him between the years 1918 and 1920. At Mr. Bowring's request a selection of duplicates will be presented to the National Museum.

The work of classifying this extensive material is proceeding, and a complete account of the Lepidoptera of Hainan will be published in a future number of this Journal. Mr. Bowring has added very largely to our knowledge of the Hainan Lepidoptera by the discovery of many forms hitherto not known to occur on the island. Some of these are new to science and in the present paper we record 22, together with the other sex of 4 already described in the ♂.

Special mention must be made of the collection obtained by Mr. Young Chun, a Chinese graduate of Harvard University, who made a journey of three months in the Five Finger Mountains. Although Mr. Chun was especially engaged upon botanical work, he managed to get together a very fine lot of Lepidoptera for Mr. Bowring. These included an interesting new form of *Kallima inachis*, a new *Tagiades*, and new forms of *Limenitis dudu*, *Hestina nama*, and *Stichophthalma nourmahal*, none of which were received from other parts of the Island. Mr. Chun also obtained the extremely rare *Pieris naganum* Moore, only known from the Naga Hills and Upper Burma.

PAPILIONIDAE.

1. *Papilio dasarada melanurus* Roths. ♀ (pl. XIX, fig. 1).

Fore wing greyish-ochreous basally, and basal two-thirds of hind wing of the same colour. Hind wing with patches in 4 and 5 small, lightly sprinkled with black scales. Both hind wings are cut off from

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the end of vein 5 to vein 2, so that no remark can be made concerning this area.

Interior, August, 1920, one ♀.

2. *Papilio coon insperatus* subsp. nov. (pl. XIX, fig. 2).

♂ ♀. Hind wing with a smaller cell-spot than in the race *doubledayi* Wall., but the postcellular spots are larger, especially the one in cellule 4; submarginal spots smaller than in *doubledayi*.

Interior, July, one ♂, September, five ♂♂ one ♀.

3. *Papilio rhetenor irene* subsp. nov. (pl. XX, fig. 3 ♂, 4 ♀).

♂. Upperside more distinctly blue than greenish. Underside with reduced basal spots. The costal stripe is much shorter. The distal spot in 2 is reduced to the retention of its upper part, which remains as a bar. No distal spots in 3 or 4.

♀. Hind wing with smaller discal patch with the spots in 4 and 6 absent or minute. The red distal, anal and marginal spots are only indicated.

Underside with basal markings as in the male, submarginal spots small.

One specimen with the fore wing ochreous-grey, less so distally (♀ allotype).

Interior, June one ♂ (type), August one ♀ (allotype), March one ♂, April six ♂♂, September two ♂♂; Five Finger Mountains, Namfun, March one ♂; Five Finger Mountains, June one ♀.

In the Hope Museum, Oxford. Interior, July one ♂. Presented by C. T. Bowring.

4. *Papilio dialis cataleucas* Roths. ♀.

Similar to the ♂. Fore wing paler above and below with more extended white scaling. Hind wing with a paler and more purplish-blue costal area.

Interior, June, 1920, one ♀ (neallotype), August, 1920, one ♀, September, 1920, two ♀♀.

A series of ♂♂ as follows:—Interior, July, 1920, two, August, three, September, six, no date, two; Five Finger Mountains, May 27, 1920, one.

NYMPHALIDAE.

5. *Penthema lisarda bowringi* subsp. nov. (pl. XXI, fig. 5).

♂ ♀. Allied to the race *formosanum* Roths. The fore wing retains the basal stripe and the inner marginal stripe of the typical form *lisarda*; the median and submedian stripes are thicker and the submarginal spots nearer the margin than in the Formosa form. Hind wing with cell-patch as in light specimens of *formosanum*, but with lower margin of cell more broadly brown. The stripe in cellule 3 well developed. Submarginal spots nearer the margin.

Interior, September, five ♂♂, one ♀ (♂ type and ♀ allotype); August, two ♂♂, June, one ♂, April, one ♂, no date, one ♂.

The Formosa race appears to be a darker development of the Hainan form, and most specimens from Formosa are very dark. The form from Tonkin appears to be nearer *formosanum* than to *bowringi*.

6. *Cynthia erota hainana* Holl. ♀ (pl. XXI, figs. 6-8).

C. deione var. *hainana* Holland, Trans. Amer. Ent. Soc., xiv., p. 116 (Hainan) (1897) ♂.

The spots and bands are pale ochreous, white only in one specimen. The basal area of both wings is greenish. Distal area of fore wing dark ochreous, of hind wing yellow-brown.

Underside with central area pale ochreous.

Aberr. 1 (fig. 7). Band of fore wing paler and with indistinct markings, sharply defined by the discal and submarginal lines. Hind wing much paler, band broader and merging into the yellow-brown distal area.

Aberr. 2 (fig. 8). Wings darker and lines more heavily marked, band of hind wing greenish-grey.

Interior, May, 1919 and 1920, five ♀♀ (♀ neallotype); June, two ♀♀ (one with white markings); August, 1919 and 1920, two ♀♀, April, 1920, one ♀, March, 1920, one ♀, August, 1920, one ♀ (Aberr. 2); December, 1919, one ♀ (Aberr. 1); no date, 1919, two ♀♀, October one ♀; Five Finger Mountains, June, 1920, one ♀.

Also a series of ♂♂ as follows: Interior, March, 1920, seven, April, four, May, twenty, July, one, August, three, April-September, four, September, four, December, three, no date, four; Leanui, wet month end of summer, one ♂.

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Some specimens are without the white dusting on the distal area below.

7. *Kallima inachis alicia* subsp. nov. (pl. XXI, fig. 9).

♂. The ground-colour of the upperside is black. Hind wing with a faint bluish tinge basally and paler costal and distal areas.

The shape of the orange band and other markings is not different from what is found in the typical form.

Underside pattern and coloration as in many Indian specimens, viz., greenish ground-colour much speckled with ochreous, and with the lines dark green and well defined.

Five Finger Mountains, 5,000 feet, June, 1920, one ♂.

8. *Limenitis dudu hainensis* subsp. nov.

♀. More nearly resembling the ♀ of *bockii* Moore. Bands white as in that form. Fore wing with the anterior part of the band more obliquely placed and nearly at right angles with the spot in 3. Postdiscal white spots distinct and including a distinct spot in 3. Pale distal margin of the bands narrower on both wings.

Five Finger Mountains, Fansa, 5,000 feet, June, 1920, one ♀.

9. *Euthalia kesava kis* subsp. nov.

Named after one of the aboriginal tribes of Hainan. Allied to *tudela* Fruh., from Tonkin, and not very different from this.

♂. Upperside of fore wing as in *tudela*. Hind wing with the green area narrowing anteriorly more than in *tudela*, its outer edge farther from the margin and distinctly dentate.

Underside with the submarginal bands more strongly marked and the lower spot on the fore wing especially large.

♀. Upperside with sharply defined bands, the postdiscal dentate line being strongly marked and more sharply dentate.

Underside with the bands strongly marked as above and bluish-white except for the central part of the band on the fore wing below vein 4. Band of the fore wing broader and near its outer edge nearer the margin of the hind wing narrower than in Indian specimens.

Interior, September, 1920, four ♂♂, two ♀♀ (♀ allotype); no date, one ♂, one ♀ (♂ holotype); August, 1920, one ♂, July, 1920, three ♂♂, two ♀♀; November, 1919, one ♂.

10. *Eulaceura osteria sitarama* Fruh. ♀ (pls. XXI, fig. 10 ♂, XXII, fig. 11 ♀).

Darker than other female forms of *osteria*. Fore wing without any white distal suffusion. Hind wing with white spots in 6 and 7 strongly marked. Discal band on both wings heavily edged with black on the inner side. Hind wing not paler in the distal areas, the black submarginal spots edged with slightly paler brown.

Underside darker than in other forms.

Interior, August, one ♀.

The ♂ has not received adequate description (Seitz Macrolep. ix., p. 702, 1913), and we take this opportunity of giving it again.

Fore wing with band continued to vein 6, curved inwardly, the spot in 2 more proximal than the others, and inner edge toothed at vein 2 and submedian.

Length of fore wing, 34 mm., other forms, 28-31 mm., ♀ 35 mm., not larger than specimens from Borneo.

A series of ♂♂ as follows: Interior, May, one, June, 1920, one, August, 1920, two, September, 1920, one.

11. *Hestina nama melanoides* subsp. nov.

♂. Fore wing as in the typical form. Hind wing with black ground-colour without any trace of reddish-brown. The discal spots in 2 to 4 strongly developed, and in the type placed parallel to the margin. A distinct series of submarginal crescent-shaped marks.

Underside of hind wing with the reddish-brown coloration of the typical form. Discal spots larger than above and submarginal crescents strongly marked.

Specimens with dark hind wing occur as aberrations in India, but they retain the markings of the type form.

Five Finger Mountains, May, 1920, three ♂♂.

12. *Charaxes polyxena paris* subsp. nov. (pl. XXII, figs. 12, 13).

Allied to the form *jalinder* Butl.

♂. Upperside of fore wing with the white band curved on its inner edge, which is sharply limited by a heavy black line of three bars from vein 4 to the submedian. The band is continued to the inner margin, but between this and the submedian is sprinkled with the tawny basal colour.

Hind wing with apical patches large, but the spots below these are

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smaller than in most specimens of *polyxena* forms. Underside russet ground-colour and marked as in most other forms. Owing to the great variation of the underside pattern in this species we refrain from giving a detailed description.

Interior, September, 1920, one ♂.

13. *Charaxes marmax bowringi* subsp. nov. (pl. XXII, figs. 14, 15).

♂. Fore wing with the spots of the marginal band below vein 5 not connected, the pair below vein 2 together smaller than the spot in 2. Discal spots and lines only faintly indicated, and the spot at base of cellules 5 and 6 minute. Hind wing with the submarginal spots free, the four lower ones smaller than in most specimens of the typical form.

Underside as in the typical form.

Interior, June, one ♂, July, 1920, one ♀.

The ♀ is too worn to permit of any description.

14. *Charaxes aristogiton indefinita* subsp. nov. (pls. XXII, fig. 16, XXIII, fig. 17).

This specimen presents most of the characters of *aristogiton*, especially in the characteristic coloration of the underside.

♂. Fore wing with black marginal border more strongly incurved between veins 5 and 3; postdiscal waved line faintly marked as in *marmax*; subcostal black patch smaller than in most specimens of *marmax*; discal spots in 5 and 6 reduced to thin short bars. Hind wing with the two apical spots free, the other four spots smaller than in typical form.

Underside coloration as in typical form. The hind wing with the outer edge of the dark postdiscal band not straight but irregular as in specimens from Burma and Perak.

Interior, July, 1920, one ♂. Abdomen missing.

AMATHUSIIDAE.

15. *Stichophthalma nourmahal chuni* subsp. nov. (pl. XXIII, fig. 18).

Apparently more nearly allied to the typical form than to *nurinissa* Nicév. The type of *nourmahal* Westw. is a ♀ and is in the Joicey collection, having been received with the Grose-Smith collection.

♂. Upperside of fore wing with broader yellow apical area than in *nurinissa*. The edge of the black marginal border is sharply dentate,

and the black line invading the yellow between the veins is crossed by a transverse black bar. Hind wing only slightly paler along the outer margin. The marginal crescents are produced between the veins to a much enlarged facsimile of the markings found on the fore wing.

Underside darker than in *nurinissa* or *nourmahal* ♀, and the transverse lines only faintly edged with ochreous. The ocelli are smaller than in the two allied forms.

Five Finger Mountains, May, 1920, one ♂.

16. *Stichophthalma howqua bowringi* subsp. nov. (pl. XXIII, fig. 19).

♂ ♀. Upperside of fore wing with the submarginal line more strongly undulate and continuous, the arrow-head markings not well developed. Hind wing with submarginal line more strongly undulate and the arrow-head markings on a longer stem.

Underside of fore wing with discal line bent more strongly outward at vein 2. Ocelli smaller on both wings.

Five Finger Mountains, May, 1920, one ♂ (type) and two others; June, 1920, two ♂♂; Fansa, S.W. slope, 5,000 feet, June, two ♂♂; Interior, July, 1920, one ♀ (allotype); September, 1920, one ♂.

17. *Stichophthalma neumogeni* le subsp. nov. (pl. XXIII, fig. 20).

Named after one of the aboriginal tribes.

♂ ♀. Upperside of fore wing with heavy submarginal crescents which are connected at the veins. Arrow-head marks not connected with the crescents, large but not of definite outline and without a proximal point. Hind wing with large submarginal crescents connected indistinctly at the veins. Arrow-head marks as on the fore wing but those in cellules 4 and 5 with a proximal point.

Underside with discal line more irregular and on the fore wing more broadly edged with whitish distally. Submarginal line much less dentate than in the typical form. Antemarginal line further from the margin and faintly marked, and nearly parallel to the submarginal line.

Interior, September, one ♂ (type), two ♀♀; November, 1919, one ♀ (allotype); May, 1919, one ♀; August, 1920, one ♀.

ELYMNIINAE.

18. *Elymnias patna bercovitz* subsp. nov. (pl. XXIII, fig 21).

Dedicated to Dr. Bercovitz of the American Presbyterian Mission, whose native collectors obtained many specimens for Mr. Bowring.

♂. Smaller than the typical form. Fore wing above with smaller

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and well defined blue patches. A slight deep blue sheen without any tinge of green over the distal area. Spots in 2 and 3 with each a white dot and also a white dot in 5 at the end of the subapical band. Hind wing with the white spots more strongly marked, and with a more sharply defined edge on both sides of the wing than in the typical form.

Length of fore wing : 35-39 mm. ; in *patna patna*, 42-48.

Five Finger Mountains, June, 1920, one ♂ (type) ; Interior, September, 1920, one ♂ (smaller than type).

SATYRINAE.

19. *Ragadia crisilda crisildina* subsp. nov. (pl. XXIII, fig. 22).

♂ ♀ . Both sides with the bands whiter and more sharply defined. Hind wing with the submarginal band a little broader than in typical form.

Underside of fore wing with white marginal line more heavily marked. Hind wing with a broader interspace between the marginal and submarginal lines.

Five Finger Mountains, June, 1920, one ♀ (holotype) ; Interior, August, 1920, one ♂, one ♀ (♂ allotype) ; May, 1920, one ♀, December, 1920, one ♀ .

20. *Coelites nothis digitorum* subsp. nov. (pl. XXIV, fig. 23).

Allied to *sylvarum* Fruh. from Tonkin.

♂ ♀ . Upperside of a deep and intense blue, the apical and marginal area being steel-blue.

Underside dark as in *sylvarum*, the pale bands as in the typical form. Hind wing with the apical ocellus larger than in typical form and the two anal ocelli much larger and about equal in size, though smaller than apical ocellus.

Interior, April, 1920, one ♂ one ♀ (♂ holotype) ; May, 1920, one ♂, July, 1920, two ♀ ♀, June, 1920, one ♂, September, three ♂ ♂, two ♀ ♀ ; no date, one ♀, one ♂ (♀ allotype).

HESPERIIDAE.

21. *Paruta canostigma* sp. nov. .

Allied to *alexis* Fbr., but distinguished from this and other allied forms by the greyish stigma of the fore wing.

♂ . Upperside dark-brown. Stigma covered with short grey-white

hair. Underside similar to the allied form. Fore wing with costal two-thirds metallic greenish-blue. Hind wing with basal two-thirds metallic greenish-blue limited by the postdiscal band, which is represented by a fine white line, thickened at its lower end. Distal area purplish. Black anal lobe as in allied forms.

Length of fore wing: 23 mm.

Interior, May, 1920, one ♂.

22. *Tagiades bowringi* sp. nov. (pl. XXIV, figs. 24, 25).

We can find no near ally of this species, but in pattern it is reminiscent of *Orthopetus lidderdali* Elw.

♂. Upperside of fore wing black-brown with a bluish sheen, and with hyaline spots. A spot in the cell, four discal spots in 1b, 1c, 2 and 3, the lower one the smaller, the second more distal, the third larger than the others and more proximal, the fourth more distal; a forked marking in 3 between discal spots and cell, two hyaline streaks in 2 between discal spot and cell, a hyaline streak in cell along lower edge; a series of five subapical spots, the two upper ones a little smaller than the others, the third spot more distal, the two lower more distal and one below the other. Hind wing with black-brown ground-colour, basal half covered with short hair of ochreous-yellow colour. A distal series of ovate spots of ground-colour outlined with yellow, the four anterior spots faintly outlined, the posterior four with yellow outer patch extending to a point on the margin. A round spot of ground-colour in the cell at its end. Fringe ochreous-yellow from base to vein 5.

Underside of fore wing as above, but with a submarginal series of small greyish somewhat lunulate spots, the two lower ones only distinct. Inner margin pale yellow as far as the lower discal spot. Hind wing with markings as above. A yellow stripe between cell-spot and base, and a yellow patch between cell-spot and the postdiscal spot in 4 and 5. The yellow ground of the four lower spots is prolonged to a point basad in each case. Cellule 1b ochreous-yellow. The three anterior spots are edged with grey-white distally.

Antennae black-brown. Head black-brown, frons edged with yellowish-white, a yellowish-white spot at base of antennae. Thorax covered with yellowish-green and black-brown hair. Abdomen black-brown narrowly ringed with grey-white, basal segments fringed with short greenish-yellow hair, ventral surface yellow. Palpi black with a yellowish-white lateral stripe. Legs ochreous-yellow, femora and tibiae

black-brown on the outer side, hind tibiae with a fringe of ochreous-yellow hair.

Length of fore wing : 22 mm.

Five Finger Mountains, May, 1920, one ♂.

23. *Crossiura pencillatum insularis* subsp. nov. (pl. XXIV, fig. 26 ♂, 27 ♀).

♂ ♀. The band on the fore wing is narrower, the cell-spot smaller and the spot below vein 2 not angled, this spot in the ♀ disconnected and nearer the margin. Subapical dots smaller, the two lower ones obsolete, in the ♀ four dots placed in line.

Five Finger Mountains, June, 1920, one ♂, one ♀ (types); Interior, October, 1919, one ♂.

24. *Daimio phisara tenebrosa* subsp. nov.

♂. Upperside of fore wing with smaller discal spots. Hind wing without a band and with only the indication of the band on the underside.

Underside of hind wing with a narrow bluish-white discal band, and other markings as in the typical form. Ground-colour of both wings with a purplish tinge.

Interior, June, 1920, one ♂ (type); one ♂, no date.

25. *Lotongus avesta quinquepuncta* subsp. nov. (pl. XXIV, fig. 28).

♂. Fore wing with two small spots in the cell, the lower one a mere dot; two discal spots as in the typical form, and a spot above the submedian below the lower discal spot. Hind wing as in typical form.

Underside of fore wing with the yellow costal patch reduced to a streak. Hind wing with the yellow band a little broader, its outer edge incurved between vein 8 and the fold of 5, and between this and the submedian fold.

Head, thorax, abdomen, and legs black-brown. Upperside of thorax and base of abdomen with a metallic green reflection.

Hoihow, August, 1920, one ♂.

ZYGAENIDAE.

26. *Erasmia aliris majoripuncta* subsp. nov.

♂. Differs from *aliris* Doubl. in the larger white spots. Fore wing with the submarginal spots a little larger and other spots in the distal area without, or with the merest trace of, a blue edging. Hind

wing with the submarginal spots much larger and distinctly ovate ; the spot on vein 7 is well developed and there is an additional small spot below vein 8. Postdiscal spots much larger, the one in 5 distinct.

Underside of fore wing with blue suffusion between the lower discal spot and the lower postdiscal spot. Hind wing with a blue postdiscal streak in cellule 1b, between veins 1b and 1c.

Interior, August, one ♂ (type) ; September, 1920, one ♂ ; November, 1919, one ♂ .

EXPLANATION OF PLATES XIX—XXIV.

PLATE XIX.

- Fig. 1. *Papilio dasarada melanurus* Roths. ♀ .
2. „ *coon insperatus* ♂ .

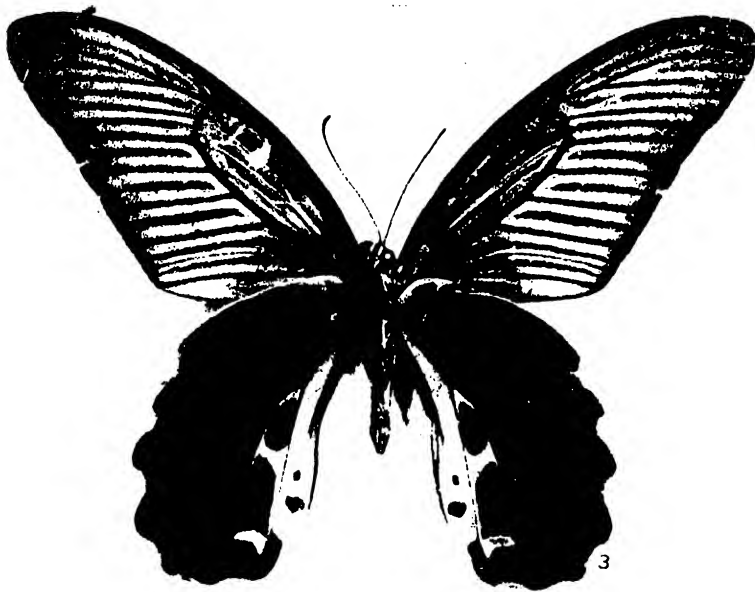


NEW RHOPALOCERA FROM HAINAN.

PLATE XX.

3. *Papilio rhetenor irene* ♂ under.

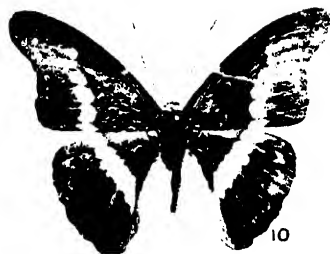
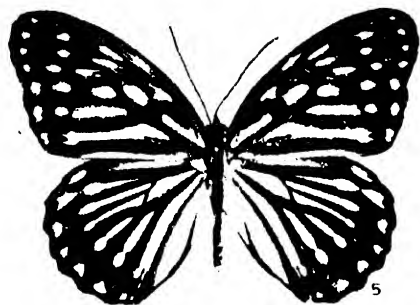
4. " " " ♀.



NEW RHOPALOCERA FROM HAINAN.

PLATE XXI.

5. *Penthema lisarda howringi* ♂.
6. *Cynthia erota hainana* Holl. ♀.
7. " " " ♀ aberr.
8. " " " ♀ aberr.
9. *Kallima inachis alicia* ♂.
10. *Eulaceura osteria sitarama* Fruh. ♂.



NEW RHOPALOCERA FROM HAINAN.

PLATE XXII.

11. *Eulaceura osteria sitarama* ♀.
12. *Charaxes polyxena paris* ♂.
13. " " " ♂ under.
14. " *marmar howringi* ♂.
15. " " " ♂ under.
16. " *aristogiton indefinita* ♂.



NEW RHOPALOCERA FROM HAINAN.

PLATE XXIII.

17. *Charaxes aristogiton indefinita* ♂ under.
18. *Stichophthalma nourmahal chuni* ♂.
19. „ *howqua bowringi* ♂.
20. „ *neumogeni le* ♂.
21. *Elymnias patna bercovitzi* ♂.
22. *Ragadia crisilda crisildina* ♀.

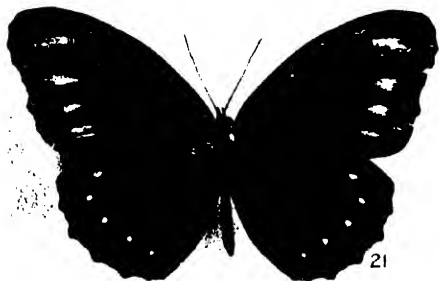
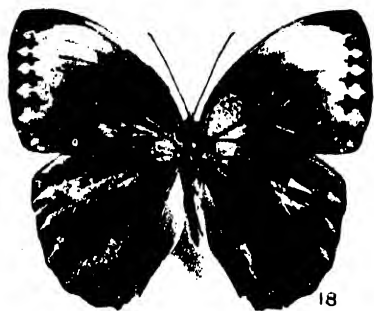
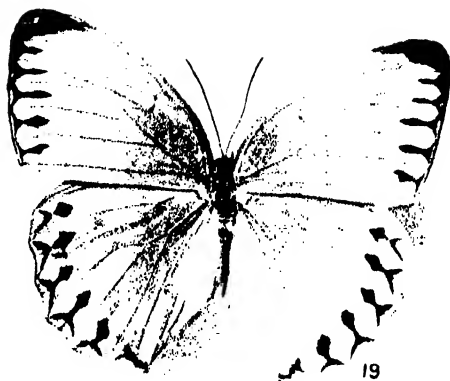
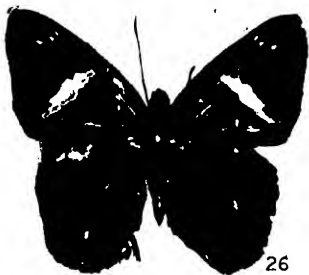
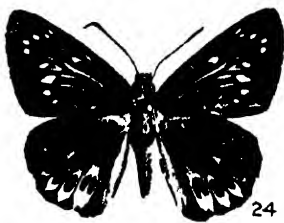
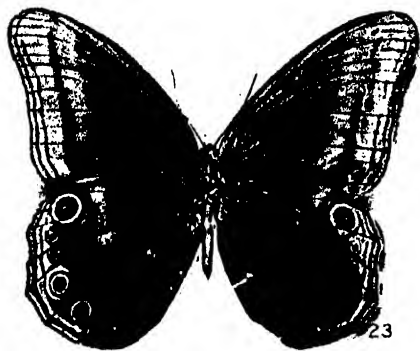


PLATE XXIV.

- 23. *Coelites nothis digitorum* ♂ under.
- 24. *Tagiades bowringi* ♂.
- 25. " " ♂ under.
- 26. *Crossiura pencillatum insularis* ♂.
- 27. " " " ♀.
- 28. *Lotongus avesta quinquepuncta* ♂ under.



NEW RHOPALOCERA FROM HAINAN.

CORRIGENDA.

Page 262.—No. 16, line 10. For “(*biselata* auct)” read
(= *bisetata* auct.).

„ 263.—Line 4. For “*effuvaria*” read *effusaria*.

„ 264.—No. 18. For “*Nothabraxes*” read *Nothabraxas*.

FOUR APPARENTLY NEW NOCTUIDAE.

DESCRIBED BY

SIR GEORGE F. HAMPSON, BART.

TYPES IN COLL. BRIT. MUS.

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FOREWORD.

As these species occur either in the type-form or in a local race in the collections made for J. J. Joicey, Esq., from Ceram (C., F., and J. Pratt) or Africa (T. A. Barns), permission has been kindly given us to publish them from manuscripts which existed at the British Museum.

Genus *Bamra* Moore, Lep. Atk., p. 159 (1882), Hampson gives type *albicola* Wlkr.

Bamra delicata nov. sp.

♀. Head and thorax white, faintly tinged with yellow-green, the thorax irrorated with black-brown; palpi with black patch at side of first joint, the second and third joints black at base; antennæ black; pectus and legs white, the tibiae irrorated with blackish, the fore tibiae black in front, the tarsi black ringed with white; abdomen white, dorsally irrorated with blackish, the crests tinged with green. *Fore wing* white irrorated with blackish and tinged with yellow-green except on terminal area from costa to antemedian fold, which is tinged with purplish; a black point at base of costa; subbasal line black, waved from costa to submedian fold; antemedial line double, the inner line indistinct, the outer black, forming a small spot at costa, then waved, angled inwards at vein 1; a black point in middle of cell; reniform small, defined by black; a double waved medial line, indistinct except

at costa, excurved round the reniform; postmedial line black, forming a small spot at costa, bent outwards and almost obsolete below costa, then irregularly waved and dentate, from below vein 5 angled inwards to lower angle of cell, then outwardly oblique, an indistinct dentate blackish line beyond it, and a black streak in submedian fold; subterminal line indistinct, white, slightly defined on outer side by brown and on inner side by black towards costa, waved, angled outwards below veins 7 and 4; a waved black terminal line forming points at the interspaces; cilia intersected with black at the veins. *Hind wing* pure white, the terminal area suffused with fuscous-black narrowing to tornus and with a slight oblique white bar on it at submedian fold; a slight waved black terminal line; cilia white with a blackish line through them and intersected with black at the veins. Underside of fore wing fuscous-black, the inner area and basal half of costal area white.

Habitat.—S. Nigeria: Old Calabar (Crompton) one ♀. Ilesha (Humfrey) three ♀ ♀ type. Ex. 40-44 Mill.

Genus *Ericeia* Wlkr. xiii, 1089 (1859), Hampson gives type as *sobria* Wlkr.

Ericeia goniosema nov. sp.

Fore and mid tarsi of ♂ with the first joint fringed with hair above, the hind tarsi fringed with hair above to near extremity.

♂. Head and thorax grey tinged with red-brown, the thorax irrorated with a few black scales; abdomen dark-brown, irrorated with a few black scales, the base grey tinged with red-brown. *Fore wing* grey tinged with purple-brown, and irrorated with a few black scales; traces of a waved black subbasal line from costa to vein 1, with a small black spot on it below costa; antemedial line black, interrupted, with black spots on it at costa and vein 1, incurved in cell and excurved below the cell; reniform bright red-brown more or less suffused with black-brown, oblique and strongly produced at lower extremity; a black spot above it on costa; postmedial line treble, black, waved, oblique to vein 6, incurved at discal fold and below vein 4; some whitish points beyond it on costa; subterminal line whitish defined on each side by purplish chocolate-brown, on inner side broadly diffused and forming somewhat wedge-shaped marks at discal and submedian folds, the line slightly angled outwards then inwards below the costa,

angled outwards below vein 4, then incurved; a series of black points before termen and a waved black terminal line. *Hind wing* greyish suffused with purplish red-brown and irrorated with black; an oblique blackish medial line; traces of a waved postmedial line; subterminal line pale, waved, defined on inner side by rufous and black marks; a series of black points before termen and black terminal line. Under-side greyish suffused with red-brown and irrorated with black; both wings with black discoidal spot and crenulate postmedial line; fore wing with slight sinuous subterminal shade; hind wing with crenulate black line.

Ab. 1. Fore wing with the markings much less distinct, the reniform filled in with pale red-brown.

Habitat.—British New Guinea: Ekeikei (Pratt), one ♂ type. German New Guinea: Eitape one ♂, two ♀♀. D'Entrecasteaux Islands; Ferguson Island (Meek), three ♂♂. Louisiade Islands: St. Aignan Island (Meek), two ♂♂. Queensland: Townsville (Lyell), one ♂. Ex. 50 Mill.

Genus *Platyja* Hbn. Verz., p. 268 (1818), Hampson gives type *unminea* Cr.

Platyja cyanocraspis nov. sp.

Fore wing with the apex slightly produced and not falcate, mid legs of ♂ with tuft of long hair from femoro-tibial joint; the hind tarsi not fringed with long hair above.

♂. Head, thorax and abdomen deep chocolate-brown, the last dorsally with a slight greyish tinge; tibiae irrorated with white, the mid-tibiae with large tuft of yellow hair below, the tarsi ringed with white. *Fore wing* deep chocolate-brown; a slight streak of white scales below basal half of costa; antemedial line indistinct, brown faintly defined on inner side by blue-grey, oblique to median nervure, then excurved; a chocolate-brown annulus in middle of cell; an oblique fulvous yellow bar beyond end of cell, its upper part rather elliptical and with some red-brown in centre; postmedial line brown with black-brown points at the veins and defined on outer side by blue-grey, slightly waved, oblique and with some rufous suffusion before it to discal fold, then rather inwardly oblique and below vein 3 forming a sinus to below submedian fold, filled in with rufous below vein 2, then retracted upwards and inwards to median nervure before end of cell and oblique and sinuous to inner margin; a narrow bluish-white

terminal band except at apex with a red-brown line near its inner edge and a rufous terminal line; cilia bluish-white with a slight brown line near base, and brown tips. *Hind wing* deep chocolate-brown; a faint curved postmedial line with dark points at veins from vein 5 to inner margin; a narrow bluish-white terminal band from apex to vein 1 with a slight brown line on it and a red-brown terminal line; cilia bluish-white mixed with red-brown. Underside clothed with velvety deep chocolate-brown hair; fore wing with some blue-white scales below costa beyond middle and oblique blue-white shade from apex.

Habitat.—Dutch New Guinea: Oetakwa River, Snow Mountains (Meek) one ♂ type. Ex. 80 Mill.

Genus *Bocula* Gn. Spec. Gen. Lep. vii, 295 (1852), Hampson gives type *caradrinoides* Gn.

Bocula lophoproctis nov. sp.

Antenna of ♂ with fasciculate cilia.

Patagia of ♂ very short, with tufts of long hair from below them; abdomen with the anal tuft very large.

Fore wing of ♂ very broad, the inner margin lobed at tornus; hind wing with the apex arched and the termen truncate, a fringe of downturned silky hair on apical half of terminal area.

♂. Head and thorax pale rufous, the tegulae with a few dark-brown scales; antennae dark brown except towards base; palpi chocolate-brown, whitish at tips; pectus and legs chocolate-brown; abdomen chocolate-brown mixed with grey, the anal tuft reddish-ochreous. *Fore wing* ochreous white tinged with rufous and irrorated with dark brown; a small black-brown spot in the cell near base; a black discoidal point; faint traces of an oblique brownish postmedial line; the terminal area chocolate-brown with deep chocolate on its inner edge from apex to vein 2, its inner edge curved inwards below apex, strongly bent inwards at vein 6, incurved to vein 3, then oblique to termen below vein 1; a terminal series of black points defined on inner side by ochreous points to below vein 2. *Hind wing* with the costal half whitish, the rough scaling on apical area ochreous, the inner area suffused with brown. Underside ochreous suffused and irrorated with brown.

Habitat.—Dutch New Guinea: Fak-fak (Pratt), two ♂ ♂ type. Ex. 36-38 Mill.

ON SOME APPARENTLY NEW SPECIES AND FORMS OF NOCTUIDAE.

COLLECTED BY C., F., AND J. PRATT, IN THE MOUNTAINS OF CENTRAL
CERAM, OCTOBER, 1919, TO FEBRUARY, 1920.

BY MISS A. E. PROUT, F.E.S.

AGROTINAE.

The generic name *Agrotis* is employed here as by Sir G. Hampson in his Cat. Lep. Phal., vol. iv. The generic nomenclature of the *Agrotinae* needs careful sifting and readjustment.

1. *Agrotis magnipunctata* sp. nov.

♂, 32—34 mm.

Head and third segment of palpus whitish mixed with brown; thorax whitish, slightly irrorated with brown; base of tegulae, side of head and second segment of palpus deep, glossy black-brown; antennal shaft brown; pectus, legs and abdomen beneath creamy-white, the tarsi broadly banded with black; abdomen above grey, slightly darker at base of segments.

Fore wing pale-grey irrorated with brown, the lines brown; the subbasal double, indistinct, slightly waved and oblique, from costa to SM; antemedial indistinctly double, from costa at nearly one-third to about one-third hind margin, waved, bent outward behind costa and angled in on SM, behind which it becomes obsolescent; orbicular rather large, pale-grey, round, defined on each side by dark-brown and with two or three dark specks at middle; reniform nearly round, a little larger than orbicular, defined at sides by dark-brown and with slight brown line at middle, hardly defined anteriorly and posteriorly; a diffused red-brown medial shade, outwardly oblique from costa to M, thence inwardly oblique to hindmargin; postmedial line dark-brown, strongly bent outward from costa at about two-thirds, gently excurved to fold, thence slightly bent outward, distally dentate, with black teeth on the veins; subterminal only indicated by some diffused blackish spots

between the veins; termen with very conspicuous black interneural spots; fringe greyish mixed with pale-brown, a fine white line at base.

Hind wing shining white, with slight brown shading about costa and at termen; a brown discal spot.

Underside of fore wing brownish-white, the cell clothed with blackish hair; a dark discal spot and semi-macular postmedial line; some black marginal dots and slight black marginal line. Hind wing white, costally irrorated with brown; a black discal spot and dentate postmedial line, becoming obsolescent behind R^1 .

Manusela, 6,000 feet, October to December, 1919, two ♂♂.

Belongs to Section IV of Hampson: ♂ antenna serrate and fasciculate.

2. *Agrotis pallidisigna* sp. nov.

♂, 38 mm.

Head, thorax, third segment of palpus and base of antennal shaft deep ochreous; second segment of palpus, pectus and legs red-brown, the tarsi blackish; abdomen above pale ochreous and reddish-brown, the basal half clothed with a dense tuft of greyish-ochreous hair; abdomen beneath pale red-brown.

Fore wing deep ochreous, suffused in parts with purple-brown and fuscous, the markings obsolescent. Some white scales at base and along basal third of costa; traces of a subbasal line excurved behind costa and incurved in cell; antemedial line almost obsolete to M, bent outward in fold; orbicular round, indistinctly defined on each side by brown, with slight pale annulus; a slight dark spot at end of claviform; reniform pale, irregularly kidney-shaped, with slight ochreous line at middle and posterior black dot; reniform indicated by black dots on the veins, from costa at about five-sevenths, excurved to fold, where it is angled inward, and bent outward to hind margin, distally shaded with purple-brown (especially behind M); subterminal line distally defined by purple-brown, slightly excurved behind costa and M; a slight dark terminal line; fringe deep ochreous, the outer half shaded with purple-brown.

Hind wing ochreous-white, the termen shaded with brown; a slight brown discal spot and terminal line.

Underside of both wings shining ochreous-white with the costa and tips of fringes broadly shaded with pale rufous and with slight indications of a postmedial line at costa; a slight terminal line on both wings; discal spot absent.

♀, 40 mm.

Head and thorax redder than in the ♂; abdomen beneath whiter; fore wing almost entirely suffused with purple-brown and rufous, leaving only the orbicular and reniform pale ochreous; reniform with a black dot in its anterior half in addition to the posterior one. Hind wing rather more smoky than in the ♂. In spite of these differences there seems no doubt that this is the ♀ of *A. pallidesigna*, the underside of both wings, as well as the general scheme of the upperside, being identical.

Manusela, 6,000 feet, October to December, 1919, one ♂, two ♀♀. Belongs to Section IV of Hampson.

3. *Agrotis hasta* sp. nov.

♂, 40 mm.

Head, tegulae and third segment of palpus whitish, the tegulae with a fine black line at base, followed by a band of pale rufous; second segment of palpus blackish; thorax and antennal shaft pale rufous; abdomen above tinged with rufous (more fuscous in the type); abdomen beneath, pectus and legs whitish, tinged with pale rufous (hair on pectus and tibiae deeper rufous in the type).

Fore wing pale ochreous irrorated with rufous (except on costa from base to postmedial line, which remains pale as in *A. plecta* L.); a thick black streak in cell from near base to beyond reniform (in one specimen reaching the postmedial line); a diffused black streak behind cell from base to antemedial line; orbicular and reniform white, the former small, round, the latter narrow, kidney-shaped, slightly defined by blackish, with a fine rufous line at middle; antemedial line ill-defined, brown, waved, from one-third costa to two-fifths hind margin; postmedial line brown, bent outwards from two-thirds costa to the subcostals, vertical to M^1 and slightly incurved to hind margin; subterminal line almost obsolete except for a slight proximal dark spot at costa and faint proximal fuscous shading; a strong row of interneural terminal black spots; fringe dull rufous with an ochreous line at base.

Hind wings smoky-brown, whiter at base, with slight discal spot and curved postmedial line; interneural black terminal spots; fringe ochreous-white.

Both wings beneath smoky-brown, a little paler towards termen, costally pale rufous to postmedial line; the veins towards termen a

little darker; hind wing paler on abdominal half; both wings with discal spot and dark waved postmedial line; margin and fringes as above.

4,600 feet, January, 1920, two ♂♂.

Belongs to Section V of Hampson, ♂ antenna ciliate. Perhaps nearest to *A. plecta* of any previously described species, but very distinct.

4. *Agrotis pallidimargo* sp. nov.

♂, 40—41 mm.

Head, palpus, and thorax pale dove-colour (varying slightly in different specimens), the second segment of palpus shaded with rufous and blackish; antennal shaft brown; abdomen above ochreous-grey, the anal tuft pale ochreous; abdomen beneath, pectus and legs ochreous-white, more or less strongly tinged with rufous, the tibial spines well-developed, deep red-brown.

Fore wing dove-colour, slightly flushed in parts with pink and sparsely irrorated with fuscous; markings (with the exception of the reniform and a subterminal costal spot) very ill-defined. Slight sub-basal black spots on costa and M, and a dot in cell further removed from base; antemedial line from a black dot at one-third costa, oblique and waved to near middle of hindmargin; orbicular large, round, distally and proximally defined by slight dark lines; claviform obsolete; reniform a slightly diffused red-brown patch, blackened and bent outward posteriorly, with slight pale annulus and indistinct dark definition; postmedial line double, dentate, the distal line composed of black teeth on the veins, the proximal of slight lunules between the veins, the latter strongly bent outward from a black spot at two-thirds costa, gently excurved to fold and slightly bent outward to hindmargin near tornus; subterminal line defined by the costal dark patch and a row of slight black proximal points, slightly bent outward at SC⁵, thence almost vertical; a fine rufous marginal line, thickened to spots in the interspaces; fringe ochreous with broad rufous shading at middle and some fuscous at the tips.

Hind wing pale greyish-ochreous with the hair on abdominal margin and fringe clearer ochreous; an indistinct dark discal spot and subterminal shade and a still slighter postmedial line; the termen pale except for the fine brown terminal line.

Underside of both wings pale-ochreous with the costa broadly pale-

rufous; the fore wing (with the exception of the termen and hind-margin) and costal fourth of hind wing irrorated with fuscous; both wings with slight subterminal shading, discal spot and postmedial line, the latter two better defined on hind than fore wing.

♀, 43 mm.

Fore wing a little darker and more violet in tone than in the ♂; hind wing with the distal third somewhat darkened.

Manusela, 6,000 feet, October to December, 1919, four ♂♂, one ♀.

Probably belongs to Section V of Hampson, though the antennal shaft appears to be subserrate and the ciliation is fasciculate.

Nearest to *A. stigmatius* Warr., from which it differs in the following points: In *pallidimargo* the fore wing is rather broader and less brown in tone than in *stigmatius* (this refers to the ♂ only); the subterminal line is more broken and indefinite; the postmedial line starts a little nearer to apex and is less strongly bent outwards at costa.; reniform less sharply defined; the hind wing is very distinct in the ♂ owing to the darkest shading coming on the subterminal area, not on the termen (as in *stigmatius* and the majority of *Agrotis* species). The hair on second segment of palpus appears also to differ, being less strongly pointed at extremity in *pallidimargo* than in *stigmatius*, but it is just possibly worn in all four Ceram ♂♂, though probably the distinction would hold good.

5. *Agrotis olivacea*, sp. nov.

♂, 36 mm.

Head, tegulae and third segment of palpus, pale olive-brown; thorax and antennal shaft predominantly red-brown; second segment of palpus, pectus and legs dark red-brown, the tarsi banded with blackish and ringed with white; abdomen above clothed with rough tawny-brown hair; some more golden hairs in anal tuft; abdomen beneath largely irrorated with red-brown.

Fore wing pale olive-brown irrorated with red-brown (especially near postmedial line), and shaded with violet on terminal area, variegated; lines dark-brown, double; costa dark red-brown. Sub-basal line slightly bent out at costa and angled inward in cell, ending in a dark spot at M; a slight brown mark in cell near antemedial line; antemedial line from about one-third costa, bent outward to SC, thence

crenulate, slightly incurved to hindmargin at about two-fifths, ending in a diffused dark patch; claviform suggested by a black spot at end; orbicular large, round, defined on each side by brown; reniform ill-defined, kidney-shaped, irrorated with reddish, with a black spot behind it; a slight brown medial shade (defining the redder postmedial area); outwardly oblique from middle of costa to M, thence a little inwardly oblique to hindmargin near antemedial line; postmedial line outwardly oblique from costa at about two-thirds to SC⁵, nearly vertical and scarcely crenulate to just before hindmargin, bent outwards to hindmargin at about three-quarters; subterminal line proximally defined by red-brown irroration and distally by violet shading; slightly bent inwards behind costa and incurved behind M¹; veins irrorated with black and white, especially towards termen; a red-brown terminal line; fringe tawny-brown, with a red-brown line at middle and some grey-brown at tips.

Hindwing ochreous suffused with smoky-brown; a faint discal spot and fine brown terminal line; fringe ochreous.

Fore wing beneath ochreous largely suffused with smoky-brown; the costa broadly red-brown with medial and postmedial dark spots; a slight dark cellspot and indications of a postmedial line; termen paler; fringe tawny and reddish. Hind wing ochreous-white, irrorated with brown on apical third of costa; costa broadly irrorated with red-brown; a moderate-sized discal spot, with a brown spot before it on costa; a slight postmedial line; fringe ochreous.

Manusela, 6,000 feet, October to December, 1919, two ♂ ♂.

Belongs to Section V of Hampson, the antennal cilia somewhat fasciculate. Perhaps nearest to *rubicilia* Moore and *nigrosigna* Moore, which Hampson (erroneously?) regards as forms of one species.

6. *Agrotis magnisigna* sp. nov.

♀, 30 mm.

Head, tegulae and palpus bright-ochreous mixed with rufous, the palpus shaded with black on outer side of segment 2; thorax (worn) apparently rufous shaded with fuscous; antennal shaft fuscous; pectus and legs greyish-ochreous tinged here and there with rufous and fuscous; abdomen above and beneath pale-cinereous.

Fore wing above whitish irrorated with red-brown, with the markings red-brown or blackish. Subbasal and antemedial lines represented by black spots on costa (at about one- and two-sevenths) and

black lunules on M, the antemedial indistinctly waved and oblique to near middle of hindmargin; orbicular broad, pale, open anteriorly (with the costa before it pale), rounded and defined by black posteriorly, with a little rufous irroration in centre; claviform represented by a black spot behind orbicular; some brown shading in cell between the stigmata; reniform proximally defined by a black line followed by a pale lunule, distally very ill-defined, ochreous, with a slight brown definition at middle; postmedial line brown, macular, bent outward from a black spot at three-fifths costa, excurved round cell and somewhat oblique to hindmargin at two-thirds; subterminal line ochreous, proximally defined by a dark streak from costa and brown spots on the veins; a fine black terminal line thickened to spots on the veins; fringe pale rufous with an ochreous line at base.

Hind wing pale greyish-ochreous, a shade darker at termen, with discal spot, slight postmedial and subterminal shades, and fine dark terminal line; fringe ochreous-white.

Underside of fore wing pale grey-brown with the distal half of costa and the fringe more ochreous; some dark spots on costa, and traces of a discal spot; termen as above. Hind wing ochreous-white with some costal dark irroration, a discal spot and pale brown waved postmedial line; termen and fringe as above.

Manusela, 6,000 feet, October to December, 1919, one ♀.

In the absence of the ♂ it is impossible to say with certainty where this species belongs; possibly it should be placed next to *A. olivacea*, of which, however, it can scarcely be the ♀.

7. *Agrotis angusta* sp. nov.

♀, 31 mm.

Head and thorax red-brown intermixed with blackish; palpus blackish, with a few pale scales; antennal shaft black; abdomen olive grey-brown, the anal tuft yellowish-white; pectus and femora grey-brown; tibiae above and tarsi blackish ringed with white at the joints; abdomen beneath whitish mottled with grey-brown.

Fore wing suffused with reddish-brown and slate-grey, the red tints predominating round the cell, leaving a large pale slaty-blue orbicular, with the cell on each side filled in with blackish; the lines double, ill-defined; the subbasal almost obsolete except at costa, where it is excurved; the antemedial indistinctly visible on costa, at about one-fourth, reappearing in the fold, where it is excurved, strongly excurved before hindmargin; claviform absent; reniform represented by a slate-

grey lunule on the discocellulars; postmedial line from about three-fifths costa, strongly bent outward to SC⁵, slightly excurved round cell and incurved in fold; subterminal line proximally and distally defined by reddish and slate-colour, angled inward about SC⁵, thence nearly straight to tornus; fringe reddish-brown intermixed with slate-colour, with a slight pale line at base.

Hind wing greyish-white, with grey discal dot, indistinct curved postmedial line, and fine grey terminal line; fringe ochreous-white.

Underside of both wings greyish-white, hind wing with the abdominal half of the basal area whiter. Fore wing with slight discal spot and traces of a slight crenulate postmedial line; costa and tips of fringes tinged with rufous, fringe with an ochreous line at base. Hind wing with fuscous discal spot, crenulate postmedial line, and fine terminal line; fringe pale, the apical fourth shaded with fuscous.

Manusela, 6,000 feet, October to December, 1919, one ♀.

An unusually narrow-winged species for the genus *Agrotis*, but appears to belong here. Perhaps near to the last two species (*magnisigna* being also rather narrow-winged), but cannot be placed with certainty in the absence of the ♂.

HADENINAE.

8. *Tiracola rufimargo* Warr. *versicolor* subsp. nov.

♂, ♀, 53—58 mm.

Differs from *T. rufimargo rufimargo* Warr. chiefly in the sharper, more contrasted markings of the fore wing and the large pale reniform, the latter being defined distally and proximally by heavy dark shading, intersected by the whitish veins. Postmedial line of dots distally edged by a slight pale line; orbicular sometimes with a nearly complete white annulus, very variable in size; base of wing and area between postmedial and subterminal lines usually pale pinkish- or greenish-grey, the termen (except apex) and anterior half of medial area always more or less darkened (sometimes strongly banded), usually tinged with reddish. In one ab. the reniform is almost entirely white, the orbicular a very large white circle, broadly interrupted by the ground-colour at the middle of the cell. In several specimens the reniform has a moderate-sized clear yellow spot at the middle of its distal edge. The medial dark band appears usually to be stronger in the ♀.

Manusela, 6,000 feet, October to December, 1919, twenty-nine ♂♂, five ♀♀.

9. *Tiracola concolor* sp. nov.

♂ ♀, 68—75 mm.

Head, thorax, and palpus typically greenish-grey (sometimes tinged with pale rufous), the second segment of palpus blackish on outer side, the hair on metathorax tipped with dark purplish-red; abdomen above greyish-brown with the lateral and anal hair pale ochreous-brown, more or less shaded with pale rufous.

Fore wing typically greenish-grey, sometimes almost entirely suffused with pale rufous; the lines almost obsolete. Four black dots at nearly even distances along costa, marking the origin of the four lines (to the postmedial); an antemedial black dot sometimes present on SM² at about one-third from base; two of the ♀♀ with a broad dark band occupying the whole medial area (red-brown in one, purple-brown in the other), and three of the ♂♂ with some medial clouding on anterior third of wing; reniform a whitish or yellowish lunule, surrounded by greenish or grey shading and (more or less distinctly) by an annulus of white spots edged with red-brown (in the banded forms this annulus is nearly lost); a postmedial row of slight black spots on the veins (obsolete on R²), bent outwards from four-sevenths costa to R¹, slightly bent inward from R³ to SM² (in two ♂♂ these spots are obsolete); a yellow subterminal line, distally dark-edged, from SC⁵ to fold, bent inward before R², then slightly excurved; termen (except apex) strongly darkened in the five banded specimens, slightly so in two or three other ♂♂ and the other ♀; a row of black and white interneural spots close to termen; fringe predominantly fuscous, rufous opposite the veins, with a fine pale terminal line.

Hind wing almost as in *T. rufimargo*, but with the smoky areas darker and the hyaline patch in ♂ (not present in "both sexes" of *rufimargo*, as Warren erroneously states in Seitz Macro-Lepid.) more conspicuous; ♀ hind wing with the rufous shades somewhat reduced.

Underside of fore wing as in *rufimargo* Warr.; ♂ typically with the whole hind wing suffused with rufous; ♀ with the rufous tinge on hind wing slighter; one ♀ and some ♂♂ with the anterior third of hind wing pale ochreous (not the proximal and posterior areas, as in *rufimargo*.)

Manusela, 6,000 feet, October to December, 1919; twenty-two ♂♂, three ♀♀.

Distinctly the largest species as yet described in this genus.

ACRONYCTINAE.

10. *Magusa oenistis* Hmps. *pallida* subsp. nov.

♂, 40—42 mm.; ♀, 35—38 mm.

Differs from *oenistis oenistis* in the distinctly smaller size (especially of the ♀), the paler basal area of the hind wing above and the paler, more ochreous areas (especially on hind wing) on the under surface—typical *oenistis* being almost uniform red-brown beneath excepting the abdominal area of hind wing. Both sexes of *oenistis pallida* have a larger, more strongly developed, pointed black claviform, a conspicuous broad pale streak (interrupted at middle by a slight red-brown line), between reniform and postmedial line, a broad black mark on R^2 between postmedial and subterminal lines, and a horizontal black streak on termen at R^2 (more conspicuous in the ♀, which has also a slight dash on R^3). In the ♀ the ground colour of *oenistis pallida*, with the exception of the base, apex, and the pale streak between reniform and postmedial line, is uniform purplish-red—the pale medial shades of typical *oenistis* being entirely wanting; the reniform has some white shading on its distal edge which is wanting in the type-form. Three of the ♂♂ have a white spot behind M, proximally to the antemedial line.

♀ —ab. *albiplaga* ab. nov. has the posterior third of wing to post-medial line irregularly suffused with white.

Manusela, 6,000 feet, October to December, 1919; six ♂♂, three ♀♀.

11. *Trachea viridata* sp. nov.

♀, 35 mm.

Nearly allied to *T. dinawa* Beth.-Bak. (Cat. Lep. Phal. No. 2,896); possibly (though scarcely probable) merely a subspecies.

Palpus more porrect (especially segment 3) than in *dinawa*; thorax and second segment of palpus (in front) with some yellow shades, not present in *dinawa*; abdomen with the ochreous dorsal tufts absent (possibly worn off).

Fore wing only partially (not “mostly”), suffused with chocolate-brown; claviform white, without any dark definition, lunular, very short and broad; orbicular and reniform pale-green, without dark points on them, extending to well behind M (especially the orbicular), where they almost unite, with only a fine black line dividing them;

postmedial line rather more strongly excurved round the reniform than in *dinawa*; subbasal, antemedial and postmedial lines all more or less white in fold; the dark-brown mark at apex and brown terminal line practically absent in *viridicans*.

Hind wing with a distinct, curved and waved postmedial line and slight discal spot.

Underside almost without the red-brown tints of *dinawa*. Fore wing with the costa apparently ochreous (but this may be due to the effects of damp), and with a rather broadly diffused postmedial line, strongly dentate on the veins, and a pale subterminal line. Hind wing with a much smaller discal spot than in *dinawa* and with the postmedial line much more evenly curved and dentate on the veins.

4,000 feet, January, 1920, one ♀.

12. *Euplexia latifascia* sp. nov.

♂, 37—40 mm.

Head, palpus, thorax, abdomen and legs much as in *E. albovittata* Moore.

Fore wing coloured much as in *albovittata* and allied species, but with the terminal area largely suffused with pale rufous; the dark basal suffusion extending nearly to the antemedial line, which is strongly angled inward behind fold, as in *albovittata*; orbicular and reniform much as in *albovittata*, but the latter with distal dark shading reaching to the postmedial line (which is scarcely distinguishable except as a white border to the dark medial band); medial band broader than in either of the allied species.

Hind wing with the pale basal area a little whiter and more extended than in *albovittata*.

Underside also a little whiter than in *albovittata*, the hind wing with discal spot absent.

♀, 36—40 mm.

Darker than the ♂, the distal and proximal thirds of fore wing almost entirely suffused with rufous-brown, leaving only the antemedial and postmedial lines and part of the reniform white. Hind wing almost entirely smoky-brown, a little paler at base. Underside of both wings largely suffused with smoky-brown.

Manusela, 6,000 feet, October to December, 1919, eight ♂♂, four ♀♀.

It is not impossible that this species, *illustrata* Graes., *albovittata* Moore and *fusciata* Moore may be all races of one species, the forms *illustrata* and *albovittata* meeting in W. China.

13. *Eriopus ludovici*, sp. nov.

♀, 30 mm.

Head, antennal shaft and segment 2 of palpus on inner side ochreous; segment 3 of palpus and segment 2 on outer side black and white; thorax above olive-green with a few white scales; abdomen above whitish with some ochreous scales, the basal hair pale olive-green; abdomen below, pectus and legs whitish with some ochreous and olive-green intermixed.

Fore wing above pale olive-green mixed with ochreous and pink, the lines white edged with black. Subbasal line distinct to fold, angled outward behind costa and on M; a white spot in cell and pale lunular mark in fold between subbasal and antemedial lines; antemedial line bent inward behind SC, outwardly oblique to SM and bent inward to hindmargin; claviform faintly defined, rather small; orbicular an oblique V-shaped mark from the white costal bar of antemedial line, defined by whitish except anteriorly; reniform oblique, formed much as in the common *E. maillardi* Gn., with a pink tinge at middle; postmedial line a series of black-edged pale lunules (white at costa and hind margin, pink between SC⁵ and fold), the proximal edging blacker than the distal, from costa at middle, strongly bent outward and almost obsolete on SC, oblique and slightly incurved from SC⁴ to R⁸ (where it forms a distinct angle), inwardly oblique to fold and bent outward to hind margin, followed by a broad pink distal band; fold with three pink spots between the antemedial and postmedial lines; subterminal line broadly pale and proximally edged by dark streaks on the veins on anterior third, then narrowly pale and following the curves of the postmedial line; four white spots on costa towards apex; a large pale terminal spot on R⁸ at angle of termen; a row of pale lunules between the veins at termen, those behind R⁸ and M¹ proximally black-edged; fringe pale, tipped with black at the veins.

Hind wing ochreous-white, the distal half shading to reddish-grey; fringe almost white.

Wings beneath whitish; the fore wing thickly irrorated with pale rufous except towards termen, with a diffused postmedial line; hind

wing with a slight rufous subterminal shade, a fine black discal spot and curved postmedial line angled inward behind M¹.

Manusela, 6,000 feet, October to December, 1919, one ♀.

Although unmistakably an *Eriopus*, this species is very distinct, and in the absence of the ♂ it is impossible to decide its probable position in the genus. Just possibly allied to *E. chloriza* Gn.

STICTOPTERINAE.

14. *Odontodes aleuca* Gn. *seranensis* subsp. nov.

♂ ♀, 40—45 mm.

Differs from *aleuca aleuca* (from India) in the rather narrower and more elongate fore wing, the chequered fringe of hind wing (uniformly white except towards apex in typical *aleuca*), the scarcely-paler interspaces of hind wing above and the much darker underside of both wings. On the underside *aleuca seranensis* also differs from *aleuca aleuca* in the presence of a slight pale shade distally to the postmedial line on both wings, in the obsolescence of the discoidal patch on fore wing and in the discoidal spot on the hind wing being larger and more diffused than in the typical form.

Manusela, 6,000 feet, October to December, 1919, seventeen ♂♂, fourteen ♀♀.

A single specimen from Sarawak, in coll. Joicey, seems almost nearer to this form than to the Indian one.

Except in the elongate fore wing, this subspecies forms a transition to *Odontodes metamelaena* from New Guinea, which there seems little reason to doubt is in reality another *aleuca* subspecies.

Genus *Stictoptera*.

It is hoped later on to publish a paper on the genitalia of this very difficult genus, a careful study of which is being undertaken at the Hill Museum. From the results of those studies, as at present understood, it seems probable that a large number of what are at present known as "species" may have to sink; but in the meantime it has seemed best to give names to the various apparently new forms and races occurring in the present collection and to assign them later on a more definite standing as species, subspecies or aberrations.

15. *Stictoptera indescribens* sp. nov. σ ♀, 38—48 mm.

Near to *describens* Wlkr., with which it has hitherto been confused, but very distinct structurally, especially in the ♀, which is rather remarkable for the presence of retractile black tufts beneath the pleura of the fifth and sixth abdominal segments. Although the insect often dies with these tufts retracted, the black coloration always remains visible, making this ♀ at once distinguishable from the ♀ of *describens*. In the ♂ the two species are most easily distinguished by the antenna, which is shortly ciliate (apparently scarcely fasciculate) in *describens*, but in *indescribens* is fasciculate with the fascicles at least once the diameter of shaft. In *indescribens* the costa of fore wing (especially in the ♂) is usually rather less concave than in *describens*, the ♂ hind wing distinctly larger, with the hyaline area increased.

Runs to very much the same forms as *describens*, but the ♀ is usually (the ♂ sometimes) more ochreous in tone. Abs. corresponding to Hampson's abs. 2, 4, 8 and 10 of *describens* occur in *indescribens* from Ceram. There is also an ab. (♂ and ♀) with the proximal half of the wing more or less completely suffused with fuscous, distinctly defined by the medial line; a ♂-form with a leaden-fuscous patch occupying the anterior two-thirds of the wing from medial to subterminal line (the type belongs to this form) and a ♀-ab. with a broad slate-blue band proximally to the antemedial line and a slate-blue apical patch, as well as some lesser aberrations.

Coloration varying according to the form; the lines and stigmata (when not obsolete) much as in *describens*, excepting the subterminal line, which in *indescribens* is usually scarcely dentate behind R^2 and is often slightly waved from R^3 to the fold (in *describens* this line is usually sharply dentate from SC^6 to M^1 , then oblique and almost straight to the fold).

Genitalia very distinct.

Manusela, 6,000 feet, October to December, 1919, twelve ♂♂, thirty-four ♀♀. This species is also in coll. Joicey from Dutch New Guinea and Sud-Est Is., Brit. New Guinea, and in coll. Rothschild from Rook Is., and Brit. New Guinea.

16. *Stictoptera parva* sp. nov.

♂, 23 mm.

Head, palpus and thorax typically whitish shaded with dark brown, leaving a broad whitish, unshaded band across the prothorax and

patagia (a second ♂ is much darker, with the pale band replaced by dark-brown shaded with blackish); dorsum of abdomen typically brownish-grey, with the crests blackish, the basal segments paler (uniformly blackish in the second ♂); pectus, legs and abdomen whitish (a little darker in the second ♂).

Forewing typically chocolate-brown, with the basal area (except at hindmargin) and a tornal spot whitish; some blue irroration, especially along SC, on the postmedial line and on the termen between R^2 and M^2 . Subbasal brown spots behind costa and M; antemedial line indistinctly double, waved and excurved from two-sevenths costa to M, angled outward in fold, and *strongly* angled outward (to middle of wing) before hindmargin; claviform defined by a broad, curved black line at tip; orbicular round, black-outlined (especially anteriorly) with slight fuscous suffusion at middle; reniform black-outlined, rather narrow, oblique, with slight dark suffusion in the distal part and a tuft of raised scales in the proximal; a black medial line, oblique from three-sevenths costa to fold, where it is thickened and slightly angled, inwardly oblique to hindmargin; postmedial line double, waved, oblique from two-thirds costa to R^3 , inwardly oblique to M^2 and nearly erect to hindmargin; slight pale waved subterminal line; apical dashes, marginal spots and fringe nearly as in *signifera* Wlkr. The other ♂ has the pale basal and tornal patches irrorated with brown and the subbasal line better defined (double, black, dentate to fold).

Hind wing with well-developed discal spot, and broad dark border—more than one-third length of wing at middle, broadly extended along abdominal margin (narrowing to base), and somewhat broadened at costa.

Underside of both wings nearly as in *signifera* Wlkr., but fore wing with the postmedial line more strongly angled on R^3 .

♀, 30—36 mm.

As in nearly all *Stictoptera* species the ♀ fore wing is rather shorter, with apex less acute than in the ♂.

Two specimens are nearly typical, but have the prothorax and base of fore wing slightly more tinged with yellow, the tornal spot yellower and reduced in size, and the medial and terminal areas redder in tone, with the postmedial area somewhat paler.

Three ♀♀ (*ab. albifascia* ab. nov.); have the prothorax and the basal and tornal pale patches of the fore wing somewhat darkened and

the metathorax and a triangular patch at middle of hindmargin of fore wing suffused with pinkish-white.

One ♀ (*ab. signiferoides* ab. nov.) has the proximal area of fore wing, as far as medial line (with the exception of a broad pale patch along one-third of costa) suffused with rufous, with a broad black streak along M and the ordinary markings almost obsolete; recalls one of the forms of *signifera*, though easily distinguished by the oblique reniform and medial line, the yellowish tone of terminal area, &c.

Manusela, 6,000 feet, October to December, 1919, two ♂♂, six ♀♀.

17. *Stictoptera hampsoni* sp. nov.

= *Stictoptera signifera* Hmps. Ab. 7, Cat. Lep. Phal. xi, 156 (1912) (nec Walker.)

♂, 38-42 mm.

Head, palpus and tegulae whitish, irregularly banded with dark brown; thorax and patagia pale grey with a few dark markings; abdomen above pale grey; abdomen beneath, pectus and legs white, the tibiae and tarsi broadly shaded with brown.

Fore wing ochreous-white irrorated and in parts suffused with violet-grey. Markings almost exactly as in *signifera* Wlkr., but the medial line only very slightly angled outward behind costa and distinctly excurved in fold, the apical dashes thicker and blacker than in *signifera*, the proximal one shorter; claviform rather more conspicuously black. Fore wing rather broader than in true *signifera*, with the costa distinctly less arched.

Hind wing distinctly narrower than in *signifera*, the discal spot and dark border much as in that species.

Underside of both wings almost as in *signifera*, but the costal striga on hind wing a trifle nearer to the distal margin—appearing less connected with the discal streak.

♀, 34-38 mm.

Fore wing a little broader and less elongate than in the ♂, the proximal half of wing, to the medial line, evenly suffused with violet-grey, or violet-grey shading to dark purple at the medial line.

This species falls into a number of different forms, some of the principal of which are named below.

Ab. 1, *nigribasis* ab. nov., like the type, but with the base of fore wing blacker (♂ and ♀). Some ♂♂ and ♀♀ are intermediate between this and the type.

Ab. 2, *nigripuncta* ab. nov., like the type, but with a large round black spot in base of fold (♂ and ♀).

Ab. 3, *bifurca* ab. nov., proximal half of fore wing suffused with violet-grey, except an ochreous patch behind costa, and with a forked black line in cell (♂ and ♀).

Ab. 4, *ochrifascia* ab. nov., proximal half of fore wing ochreous white, with the exception of costa, hindmargin and a little violet suffusion at medial line (♂ and ♀).

Ab. 5, *nigristigma* ab. nov., similar, but with black spot as in ab. 2 (one ♂).

Ab. 6, *albifascia* ab. nov., proximal half of fore wing with a large bluish-white patch, leaving narrow violet-grey areas at base, hindmargin and middle of costa (♂ and ♀).

Ab. 7, *timesioides* ab. nov., fore wing with blue-back suffusion, almost exactly as in *timesia* Swinh. (three ♀♀). The shape of wings and breadth of border of hind wing make it practically certain that these specimens belong here.

Manusela, 6,000 feet, October to December, 1919, forty-two ♂♂, forty-one ♀♀.

The ♀ of this species matches perfectly with a single ♀ from Amboina in coll. Brit. Mus., which Hampson described as ab. 7 of *signifera* Wlkr., but it is almost certainly quite distinct from that species, the shape of both fore and hind wing being different (as already stated above), the tone of fore wing being, as a rule, more violet in *hampsoni* (less reddish on proximal half, less grey on distal half), and the various aberrations not agreeing well with any forms of *signifera* known to me. As the species does not appear to have previously been named, I have ventured to describe it here as new.

18. *Stictoptera griseata* Hampsn. *superans* subsp. nov.

♂ ♀, 37—44 mm.

Differs from the type form in the distinctly larger average size (♂ and ♀ from Sarawak, in coll. Joicey, are scarcely 35 mm., all but one of the Ceram ♂♂ and one or two ♀♀ are over 40 mm.), in the slightly more elongate ♂ fore wing, and in the whiter ground-colour and deeper black-brown markings, giving the insect a more contrasted

appearance than in the Malayan forms (this applies especially to the ♀, but is noticeable also in the ♂). The head and tegulae are also blacker-brown in the Ceram subspecies, and the subbasal striae less well-defined, though one ♂ and one ♀ show a large black spot in fold proximally to the antemedial line.

Manusela, 6,000 feet, October to December, 1919, eight ♂♂, eleven ♀♀.

19. *Stictoptera variegata* Hmps. *manuselensis* subsp. nov.

♂, 46—48 mm.

Tegulae mainly deep black, with a broad pale streak at middle; dorsum of abdomen smoky-grey, darker than in the type form.

Differs from *variegata variegata* on the fore wing in the rather heavier black shading, the absence of the posterior pale patch distally to the antemedial line, the distinct pale lunule on the proximal edge of the reniform, and in the rufous band distally to the postmedial line being clearer, less interrupted than in the type form.

On the hind wing *variegata manuselensis* differs in having the fuscous border narrower than in the type form, with the posterior third paler and interrupted by a whitish marginal line. On the under-side the difference is still more marked, the band being much paler than in *variegata variegata*, more or less broken into diffused lines, and fading away into the white ground colour at the anal angle.

Manusela, 6,000 feet, October to December, 1919, three ♂♂.

20. *Stictoptera grisea* Wlkr. *fascimargo* subsp. nov.

♂ ♀, 42—47 mm.

Hind wing slightly longer and distinctly broader in both sexes than in typical *grisea*, with the termen a little fuller about R^3 and M^1 , but almost certainly a race of this species. Border of the hind wing showing exactly the same racial development as in the last species (suggesting at least a very close relationship between *grisea* and *variegata*). All six specimens have the markings stronger than in the majority of Indo-Malayan forms, with the proximal area suffused with purplish, forming a broad, diffused subbasal band, and a second slight band distally to the antemedial line; the tornal dart is extended to the postmedial line.

Manusela, 6,000 feet, October to December, 1919, one ♂, five ♀♀.

There is also in the Ceram collection a ♀ of *semialba* Wlkr.

showing the same subspecific hind wing development as in the foregoing forms, but as it appears to me almost certain that *semialba* Wlkr. and *grisea* Moore are forms of the same species I have refrained from giving a separate name to this race, preferring to regard all seven specimens as forms of one subspecies, which must in that case stand as *semialba fascimargo*. It is by no means impossible that *variegata* Hampson, and subsp. *manuselensis* A. E. Prout, will ultimately have to sink as aberrations of *semialba* and *semialba fascimargo*.

21. *Stictoptera melancholica* sp. nov.

♂, 44—46 mm.

Head and palpus ochreous-brown shaded with dark-brown; tegulae ochreous-brown, with a broad interrupted dark line at middle, bordered (towards tips) by a fine dark line; thorax fuscous-brown; abdomen brownish-grey, paler beneath; pectus and legs pale greyish-brown, the legs broadly banded with fuscous.

Fore wing nearly as in *melanistis* Hmps., ab. 2, but the dark shades not quite so deep and glossy, the subterminal rufous suffusion scarcely noticeable and the areas between medial and postmedial lines and distally to postmedial line, and a patch on tornal half of termen conspicuously pale; medial line scarcely waved, slightly oblique from three-sevenths costa to M, thence erect to hindmargin at three-fifths; postmedial line slightly more oblique from costa to R² than in *melanistis*; three blackish spots distally to subterminal line between M¹ and hindmargin.

Hind wing with hyaline area rather less clear than in *melanistis*; the border broader (two-fifths length of wing in *melancholica*; two-sevenths in *melanistis*), more suffused on proximal side, less glossy black; discal spot obsolescent.

Underside nearly as in *melanistis*, but the fore wing without the hyaline medial patch behind M, and with anterior half of postmedial line rather more oblique; hind wing differing as above.

Manusela, 6,000 feet, October to December, 1919, two ♂♂.

Possibly a form of *melanistis* Hampson (which also occurs in Central Ceram) from which it seems indistinguishable by the genitalia, but is distinguished by the shorter, less elongate fore wing, the slightly smaller hind wing and the distinctly broader, more diffused dark border of hind wing.

22. *Stictoptera arcuata* Beth.-Bkr. f. *nigribasis* f. nov. σ , 42 mm.

Tegulae with a black line at middle, chestnut-brown at tips; patagia dark chestnut-brown except at base.

Fore wing to the medial line suffused with deep chestnut-brown, leaving an antemedial patch on costa and an I-shaped mark against medial line and hindmargin pale-ochreous; a broad black subbasal streak along costa, not continued across the wing; the dark apical markings more diffused than in a single φ in coll. Brit. Mus. (I have unfortunately been unable to see Mr. Bethune-Baker's type); the tornal dart slight and ending at postmedial line.

 φ , 38 mm.

Patagia and base of hind wing a little blacker than in the σ ; subapical dark marks not continued behind SC⁵; reniform almost obsolete (without black definition); tornal dart apparently absent (the distal half of wings is much worn).

Manusela, 6,000 feet, October to December, 1919, one σ , one φ . Also one typical φ of *arcuata*.

Just possibly a new species, but appears to me to agree in all essentials with *arcuata*, though the σ fore wing is a good deal broader than the φ .

NOTE.

One or two species in *Nigramma* or *Gyrtona* are most probably new, but it has not seemed advisable to describe them at present, owing to the great difficulty of determining the different species in this subfamily and the lack of sufficient material for the study required to arrive at any definite conclusions.

SARROTHRIPINAE.

23. *Characoma excurvata* sp. nov. σ , 20 mm.

Head, thorax, abdomen and legs coloured much as in *curiosa* Swinh., but the abdominal tufts predominantly whitish-grey.

Fore wing greyish-white, with the proximal third pale-brown; some postmedial brown shading. A subbasal black costal spot; a broad black costal streak near base and some black shading behind M; a broad black line from about one-fourth costa, outwardly oblique to

M, thence inwardly oblique to one-fourth hindmargin; antemedial line nearly as in *nilotica* Rogenh., but distinctly more excurved, proximally bordered by a white band; an ill-defined blackish medial line, acutely angled in the cell and at fold; an oblique red-brown discoidal striga; postmedial line white, proximally defined by black spots on the veins, strongly bent outward behind costa, slightly bent inward at R³, inwardly oblique to fold and angled outward on SM², with a dark-brown spot in the angle; subterminal line proximally defined by heavy black spots, bent inward at costa (leaving a white apical spot), almost erect from SM⁵ and M¹, slightly incurved at fold; a strong black terminal line, thickened to spots between the veins; fringe very long, white at base and tips, with some dark shading at middle.

Hind wing as in *nilotica*.

Wings beneath greyish-white with slight dark terminal shading.

♀. Black basal lines of the ♂ almost obsolete (just traceable; brown); antemedial line distally followed by a broad blackish band from costa to fold, thence narrowing to hindmargin and leaving a pure white spot in fold, proximally to postmedial line.

Manusela, 6,000 feet, October to December, 1919, one ♂, one ♀.

In Section I of Hampson; placed by the antemedial line should come between *vallata* Meyr. and *scoparioides* Wlkr.

24. *Nanaguna teleoleuca* sp. nov.

♀, 27 mm.

Head, palpus and thorax white, sparsely irrorated with brown; abdomen above apparently ochreous-white (may be discoloured); pectus, femora and abdomen beneath white; tibiae and tarsi tinged with ochreous.

Fore wing with the ground-colour pure white, suffused and irrorated with brown except an area behind the distal half of costa, and a broad band on posterior part of wing from base at middle, narrowing to tornus; the brown shades somewhat variegated, tinged in parts with pale rufous and greyish. A proximally pale-edged subbasal striga from costa and a dark spot on M; a slight waved, pale-edged, dark line from about one-seventh costa to one-seventh hindmargin; a proximally pale-edged, blackish antemedial (?) line from two-sevenths costa, outwardly oblique to behind SC, strongly angled inward in cell, outwardly oblique to fold and incurved to middle of hindmargin, distally defined by some

dark shading on anterior third, and by a distally-quadrate pale patch in cell ending in a blackish discal striga; anterior and posterior thirds of postmedial line white, proximally black-edged, the medial third composed of black-edged white spots in the interspaces, curved outward from middle of costa to R^1 at three-quarters of wing, curved inward to M^2 at scarcely two-thirds of wing, thence nearly erect (but slightly bent outward at SM^2) to hindmargin; a slight diffused brown line across costal white patch at two-thirds costa, and three conspicuous black dots on costa towards apex; veins of marginal area streaked with blackish; anterior half of subterminal line obsolete, posterior half white, diffused, expanded behind R^3 ; fringe chequered black and white.

Hind wing white, darkened on veins and (broadly) at termen; some rufous shading on anterior third of fringe.

Underside of fore wing brown excepting for the pale areas at margins (nearly as above); the termen, especially towards apex, flushed with rufous; the dark chequerings of the fringe rufous. Hind wing with the costa and anterior third of termen irrorated with pale rufous; the termen scarcely darkened.

Manusela, 6,000 feet, October to December, 1919, one ♀.

A very distinct species, difficult to place in the absence of the ♂, though certainly having the neuration of this genus. Perhaps related to *brunnea* Hampsn., but the third joint of the palpus is rather longer (fully as long as the second), more as in *breviuscula* Wlkr.

25. *Risoba avola* Beth.-Bak. *magna* subsp. nov.

♂ ♀, 35—42 mm.

Averages rather larger than *avola avola*. Fore wing predominantly green (of a brighter tone than the green shades of typical *avola*), with the white area reduced (sometimes almost absent) in both sexes; often strongly blotched with red-brown or blackish about the middle of wing; postmedial line slightly incurved about R^3 and excurved at fold in ♂. Hind wing slightly more tinged with ochreous than in *avola avola*.

Underside usually with the terminal dark shading a little less strong (especially on fore wing) than in typical *avola*.

♀. Ab. *ochracea* ab. nov. has the whole proximal area of fore wing to postmedial line nearly uniform ochreous-brown, with slight traces of grey antemedial and medial lines, and green reniform. Distal area of

fore wing, hind wing and underside normal. Possibly faded in some way, but appears in perfect condition.

Manusela, 6,000 feet, October to December, 1919, seventy-five ♂♂, seventy-four ♀♀ : 3,000 feet, October to November, 1919, one ♀ ; 4,600 feet, January, 1920, four ♂♂, three ♀♀.

26. *Sinna joiceyi* sp. nov.

♀, 34—38 mm.

Head, thorax, legs and abdomen beneath pure white, the fore femora and tibia shaded with golden-yellow above; head, tegulae, thorax and patagia with brilliant crimson stripes, as in *floralis* Hmps.; abdomen above bright yellow; antennal shaft yellow shaded with fuscous, basally white on inner side.

Fore wing pure white with the inner lines yellow at costa, then bright crimson; a bright yellow subterminal band, shaded with crimson only as far as R^1 and again on M^2 ; some black spots near apex. Three outwardly oblique lines from proximal half of costa, the first bent outward on SM^2 to middle of hindmargin; the second ending at fold; the third forming a large distal loop at M, behind which it curves back to join the proximal line at hind margin; a fine crimson streak in fold from near base to the end of the second line; subterminal band outwardly curved from costa at about five-sevenths to R^1 near termen, ending on M^2 in a broad, proximal crimson streak with a spur from its posterior edge; a broad, interrupted, curved black line from costa to R^1 , close to the subterminal band; a black apical spot and a terminal one on R^2 ; a slight black marginal line before tornus; fringe pure white.

Hind wing bright yellow; fringe pure white.

Underside of fore wing white, thickly irrorated with bright yellow except on distal two-thirds of costa, at termen and behind fold; slight traces of three oblique lines and black apical spot. Hind wing creamy-white, irrorated with yellow behind the cell and M^1 , and at abdominal margin.

Ab. jacobii ab. nov. has the middle of fore wing suffused with fuscous, leaving the costa, termen, base and hindmargin broadly white.

Manusela, 6,000 feet, October to December, 1919, three ♀♀ (including type and type of *ab. jacobii*); also two ♀♀ at 4,600 feet, January, 1920 (one of these belongs to *ab. jacobii*) and one ♀ at 3,000 feet, January to February, 1920.

27. *Chandica lobophorina* sp. nov.

♂, 30 m.

Head, body and fore wing nearly as in *quadripennis* Moore, but with the costal spot at origin of antemedial line larger, more triangular and nearer middle of wing than in *quadripennis*, the postmedial line being also a little nearer to apex. Still more nearly resembles *C. meeki* Warr. (from New Guinea), from which however it differs in the form of the lines, the antemedial being more erect than in *meeki*, the postmedial more angled proximally in fold and distally on M^2 ; lines a little more distinct than in *quadripennis*, a little less so than in *meeki* and *schistipennis* Warr. (from Celebes).

Hind wing much aborted, with the costal fourth forming a lobe a little more than half the length at the wing, containing C, SC^2 and R^1 ; behind this lobe the distal margin is retracted at about R^3 to nearly one-third from base (with R^2 aborted, non-functional); both the lobe and the posterior portion of wing are bordered with rather (but not exceptionally) long fringe. The whole wing except the base (which is semi-hyaline), clothed with fleshy-red androconial hair only a little paler than the fore wing; fringe yellowish-white except along the abdominal margin.

Underside of fore wing nearly as in *C. meeki*, but the reddish-grey shades rather darker; hind wing as above.

3,000 feet, January to February, 1920, one ♂.

Nearest in structure to *schistipennis*, from which it differs in the following points. The type of *schistipennis* (which is unfortunately slightly damaged) appears to have the hind wing more acutely pointed behind the lobe (in *lobophorina* it forms a broad point at R^3 and M^1), with extremely long androconial hair at the junction of the lobe with the main portion of wing (but without androconial hair scattered all over the wing as in *lobophorina*). Hind wing yellowish in *schistipennis*, with the red hair almost confined to cell and fold.

But for the structural differences in the hind wing, these four forms, *quadripennis*, *schistipennis*, *lobophorina* and *meeki*, should undoubtedly be regarded as merely subspecies.

28. *Aiteta trigoniphora* Hmps. *teretimacula* subsp. nov.

♂ ♀, 36—40 mm.

Head, thorax, pectus, legs and abdomen much as in *trigoniphora* *trigoniphora*, but the thorax above with more olive intermixed, the

pectus tinged with rufous and the ventral surface of abdomen more decidedly rufous than in the type-form.

Fore wing rufous-grey; the subterminal line more distinct than in typical *trigoniphora* (though somewhat diffused), and with a more acute angle behind SC⁵; distal edge of the triangular olive-brown patch excurved from costa to fold (almost swelled outward rather than incurved behind R²).

Hind wing with the proximal half whitish, shading to fuscous-brown at termen; fringe as in typical *trigoniphora*.

Underside of both wings in the ♀ with the costa and termen tinged with pink, nearer to *hampsoni* Beth.-Bak. than to *trigoniphora trigoniphora*; fore wing otherwise as in typical *trigoniphora*; hind wing white with some fuscous irroration on the pink terminal border. ♂ with the costa of fore wing rufous; hind wing only white in the fold, in proximal part of cell and before the origin of M².

4,600 feet, January, 1920, one ♂; Manusela, 6,000 feet, October to December, 1919, eight ♀♀.

In some respects forms a transition to *A. hampsoni* Beth.-Bak. (from New Guinea), which is doubtless another subspecies of *trigoniphora*. Easily distinguishable from both typical *trigoniphora* and *hampsoni* by the more rufous ground-colour of fore wing, the strongly angled subterminal line, the shape of the olive-brown patch, and the whiter hind wing above and beneath.

29. *Carea varipes* Wlkr. *leucobathra* subsp. nov.

♂, 46—48 mm.

Head and thorax pale ochreous tinged with olive; palpus and antenna as in typical *varipes*; dorsum of abdomen rather paler than in the typical form.

Fore wing pale reddish-ochreous, irrorated with silvery-grey, almost without black irroration; black points in cell and on discocellulars, as in *varipes varipes*; the double blackish line near termen scarcely incurved, with the proximal shading olive-green (not brownish); some purplish-grey subapical irroration beyond it; fringe as in typical *varipes*.

Hind wing with the proximal area from behind middle of costa to tornus pure white, the costa and distal half of wing orange-red.

Underside of fore wing behind cell and R² (except at termen) whitish, only slightly tinged with pink; the termen of both wings brighter orange than in typical *varipes*, less irrorated with fuscous;

the abdominal white area of hind wing broader and purer white than in the typical form.

Manusela, 6,000 feet, October to December, 1919, two ♂♂; 3,000 feet, January to February, 1920, one ♂.

On the hind wing this subspecies more nearly resembles *flava* Beth.-Bak. (from New Guinea) than typical *varipes*, Wlkr.; possibly the three are all races of one species.

30. *Carea costiplaga* Swinh. *defuscata* subsp. nov.

♂ ♀, 34—38 mm.

Head and thorax predominantly olive-brown; pectus and legs pale rufous mixed with some white and ochreous scales; abdomen above pale reddish-grey, beneath fiery-red (rather deeper in tone than in typical *costiplaga*).

Fore wing coloured as in typical *costiplaga*; subbasal striga usually obsolete; antemedial line and costal patch about as in *costiplaga costiplaga*, but the former sometimes with olive-brown distal shading extended all across wing; a slight black spot in cell in addition to the discoidal point; a dark oblique postmedial line almost parallel with the antemedial line; postmedial costal patch, subterminal shade and fringe nearly as in typical *costiplaga*.

Hind wing purplish-red, the proximal third slightly paler but not suffused with brown (as in the typical form).

Underside of both wings with rather more purplish-red suffusion than in typical *costiplaga*; fore wing with well-defined patch of white irroration on distal third of costa (not extending to apex); posterior third of hind wing nearly as above.

Manusela, 6,000 feet, October to December, 1919, seven ♂♂, two ♀♀.

C. commixta Warr. is probably the New Guinea race of this species, having the fore wing very nearly as in the darker forms of *costiplaga defuscata* (though a little less distinctly marked), the hind wing almost as in typical *costiplaga*. *Tarika* Swinh. (from Gilolo) also belongs to this group of forms, but is at once distinguishable by the yellow hind wing, the yellower tone of underside, the indistinct and more ochreous markings of fore wing above and the more curved antemedial line. It is probable that when this difficult genus comes to be worked out by the genitalia several species will have to sink and a good many more will assume subspecific rank.

31. *Carea perspicua* sp. nov.

♀, 35 mm.

Head, palpus, thorax, and antennal shaft pale ochreous-brown, shaded with pale olive and red-brown; pectus and legs whitish, the legs tinged in parts with ochreous and reddish; dorsum of abdomen pale pinkish-brown; ventral surface pale ochreous with the anus bright red.

Fore wing pale pinkish-brown, tinged with olive at costa on distal side of the postmedial line, and on termen; antemedial and postmedial lines sharply marked, olive-brown, oblique, a little excurved from costa to near the cell, the former from nearly one-third costa to middle of hindmargin, the latter from nearly two-thirds costa to hindmargin near tornus; a large black semi-circular spot on hindmargin proximally to the antemedial line; fringe dark red and grey mixed, whiter at tornus.

Hind wing pinkish-yellow, whiter at base and along costa to near apex; fringe a shade paler than wing.

Underside of fore wing pinkish-yellow, the termen tinged with red, the hindmargin (behind fold, to tornus) almost pure white; hind wing whitish, tinged with ochreous (especially at costa) and with pale rufous on termen.

Manusela, 6,000 feet, October to December, 1919, one ♀.

A very distinct species. Perhaps nearest to *Aiteta careoides* Warr. (which in coll. Brit. Mus. is placed as a *Carea* species, immediately following *rubrifusa* Hmps.), but differs in shape of wing, tone of ground-colour, distinctness and exact direction of lines, etc.

32. *Carea caroli* sp. nov.

♂ ♀, 35—42 mm.

♂. Antennae with rather *short* fasciculate cilia (once diameter of shaft?) Head, thorax, palpus and antennal shaft rufous mixed with olive-brown; pectus and legs whitish irrorated with rufous, the tarsi tinged with fuscous (in some specimens very little of the white ground remains); dorsum of abdomen whitish, more or less strongly suffused with fuscous, anal segments and ventral surface rufous, the anal tufts white.

Fore wing rufous thickly irrorated with purplish-brown, leaving a more or less conspicuous rufous patch round the postmedial line; costa white; wing very glossy with the markings obsolescent. Antemedial line from one-third costa to two-fifths hindmargin, slightly excurved,

sometimes minutely waved; a diffused, rather elongate blackish discal spot; postmedial line from nearly two-thirds costa to hindmargin towards tornus, excurved at SC^5 and R^3 and angled inward before R^2 ; a subterminal blackish shade, angled outward behind SC^5 and on R^3 and M^1 and inward before R^2 ; fringe rufous, tipped with white from about R^2 to near tornus.

Hind wing pale rufous; whiter at base and on abdominal third of wing. Abdominal margin clothed with short brown hairs, extending to the rufous area in ♂, in ♀ leaving a slight white streak in fold.

Underside almost uniform rufous in ♂, except for pale areas behind fold on fore wing and at abdominal margin of hind wing; some purplish shading on apical area of both wings. ♀ with the proximal half of costa of fore wing, an extended patch at and behind cell of fore wing and the hind wing to near termen whitish.

Manusela, 6,000 feet, October to December, 1919, six ♂♂, thirteen ♀♀; 4,600 feet, January, 1920, one ♀.

This and the two following species are very near to one another; but as there appear to be slight differences in the shape of wing and length of the antennal fasciculation, as well as in the size, tone of colour, and pattern, it has seemed necessary to accept them as three different species. In *caroli* the fore wing seems a little shorter and is decidedly less rounded at tornus than in the other two species.

33. *Carea felix* sp. nov.

♂, 43—46 mm.

Antenna with rather *long* bunches of fasciculate cilia (twice diameter of shaft?).

Head, palpus and thorax predominantly olive-brown: antennal shaft dark brown; pectus and legs much as in last species; dorsum of abdomen dull rufous clothed with purplish and olive-brown hair; ventral surface dull rufous; anal tufts white.

Fore wing pale rufous, thickly irrorated with olive-brown and purplish-grey; some silvery-grey scales on termen (especially at apex); costa pure white; wing very glossy, the markings rather more sharply defined than in *C. caroli*; lines olive-brown. Antemedial line from one-third costa to two-fifths hindmargin, oblique or very slightly incurved; a black discal point; postmedial line from two-thirds costa to hindmargin near tornus, oblique, excurved at R^3 and very slightly so at SC^5 ; a diffused subterminal shade, much as in the last species; fringe brown with a slight pale line at base and some white at tips.

Hind wing pale rufous, paler in interspaces, whitish on proximal third of cell and half of fold, but with the androconial hair rufous and white scarcely intermixed with brown.

Underside of fore wing dull rufous with the costa olive-brown and a deep red streak through cell (extending to near termen); apex violet-white. Hind wing whitish, irrorated with rufous; the costa and termen pale rufous; an ochreous shade at middle of costa.

♀, 44—46 mm.

Fore wing above more purplish in tone than in the ♂; postmedial line suffused with rufous and indistinctly double behind SC⁴; subterminal shades stronger than in the ♂. Pale apical shade of fore wing beneath more extended along termen; anterior half of wing less contrasted; hind wing with the terminal rufous shade broader and darker, slightly irrorated with fuscous.

One ♀, *ab. carneipennis* ab. nov. has the fore wing above intermediate in tone between the ♂ and ♀; the hind wing above and fore wing beneath yellowish. Possibly yet another species, but appears to be merely an aberration of *felix*.

Manusela, 6,000 feet, October to December, 1919, two ♂♂, four ♀♀; 4,600 feet, January, 1920, one ♂, one ♀.

Distinguished from the preceding and following species by the antenna, the much rounded tornus of fore wing and (?) the more acute apex of fore wing.

34. *Carea josephi* sp. nov.

♂ ♀, 42—44 mm.

♂ antenna with rather *short* fasciculate cilia (once diameter of shaft?).

Head, thorax, palpus, antenna, pectus and legs much as in last species; dorsum of abdomen whitish, clothed with ochreous, fuscous and rufous hair (the first two colours predominating); ventral surface ochreous-white (slightly tinged with rufous in the ♂ only).

Fore wing ochreous-brown, irrorated with purplish-red, especially on proximal and distal thirds, giving the wing a slightly banded aspect (more noticeable in ♂ than in ♀); costa white; wing rather less glossy than in the last two species, the markings diffused, indistinct. Antemedial line oblique from one-third costa to two-thirds hindmargin; a very indistinct diffused dark discal streak; postmedial line oblique or excurved from nearly two-thirds costa to R⁵, behind which it is

distinctly incurved to hindmargin towards tornus; a very indistinct subterminal shade (much as in the last two species); a slight dark shade at apex; fringe purplish-fusca at middle, whitish at base and tips.

Hind wing in ♂ pale orange-red, the whitish areas nearly as in the last species; androconial hair reddish and brown; in ♀ rather paler, the fold whitish.

Underside of both wings in ♂ pale orange-red, with traces of the olive-brown and bright red shades of the last species at costa and in cell of fore wing, but the former narrower, irrorated with fuscous, the latter broadly diffused; a broad purplish-fusca apical shade on fore wing, a slight one on hind wing. Underside of ♀ ochreous-white, with pale rufous shades in cell of fore wing and at costa and termen of hind wing; the apical shade much paler than in the ♂.

Manusela, 6,000 feet, October to December, 1919, two ♂♂, two ♀♀.

Distinguished from *C. felix* by the antenna, as well as by the different tone of colour, diffused markings, discal *streak* (not *point*), paler underside, &c.; from *caroli* by the longer fore wing, with more rounded tornus, as well as by the different tone of colour, &c. Termen of fore wing rather more evenly rounded in this species than in either of the other two.

35. *Maceda rotundimacula* Warr. ♀.

♂, Nov. Zool. xix, 48 (1912) (Brit. New Guinea).

♀, 37—39 mm.

Head and thorax above fuscous; pectus, legs, and abdomen as in ♂.

Fore wing above purplish-fusca, with a rufous basal patch, shaped as in the ♂ but brighter red; black cellspot and indistinct postmedial line much as in the ♂; the broad dark subapical shade and round apical spot present but much less conspicuous than in the ♂, both being somewhat approximated to the purplish ground-colour.

Hind wing and underside of both wings nearly as in the ♂, the apical spot on fore wing beneath a little less distinct.

Manusela, 6,000 feet, October to December, 1919, three ♀♀; also seven ♂♂.

Not improbably a new subspecies, the ♂ being decidedly larger than in the two ♂♂ in coll. Rothschild (from Brit. New Guinea and Queensland), with a more strongly angled postmedial line, a larger

terminal white spot at fold on hind wing (especially beneath) and the black terminal line of hind wing beneath less proximally produced in fold than in the type of *rotundimacula*; but without more material from New Guinea it is impossible to say whether these differences are constant.

CATOCALINAE.

36. *Ulothrichopus macula* Hmps. *reducta* subsp. nov.

♂ ♀, 66—70 mm.

Averages slightly smaller than typical *macula* Hmps. Fore wing rather more contrasted, generally with the pale shades intensified (especially the spot behind the reniform, which is sometimes almost white in *macula reducta*), and the anterior dark shading proximally to the antemedial line and distally to the postmedial more pronounced, the latter being often continued more or less distinctly to the hindmargin. The discoidal bar on the hind wing is usually reduced to a spot at lower angle of cell (sometimes almost obsolete) and the terminal black band is slightly narrower than in typical *macula*, and usually ends immediately behind M^2 (though two or three specimens show some trace of a narrow, *straight* continuation as far as SM^2). The underside shows a similar reduction in the terminal band of the hind wing and a tendency for the medial band to be slighter or to become almost obsolete; otherwise as in New Guinea specimens.

Manusela, 6,000 feet, October to December, 1919, twenty ♂♂, eleven ♀♀; 4,600 feet, January, 1920, one ♀.

37. *Nyctipao felderi* sp. nov.

♀, 140 mm.

Head, thorax, palpus, abdomen and legs fuscous brown.

Fore wing fuscous brown with a purplish gloss; very thickly scaled. Faint traces of an excurved, waved antemedial line, from about two-ninths costa to one-fifth hindmargin; whorl-shaped discoidal mark somewhat as in *leucotaenia* Gn., but somewhat broader and rounder, without any white on its distal edge, and with the inverted comma-mark less sharply defined; traces of a vertical, waved medial line from proximal edge of the discoidal mark to hindmargin; postmedial line almost obsolete; a rather small rounded white subterminal spot behind

costa and faint traces of a row of ochreous subterminal spots, arranged somewhat as in *leucotaenia* Gn.

Hind wing velvety fuscous-brown with a purplish gloss. Faint traces of curved medial and straight postmedial black lines; a curved pale ochreous striga behind costa, and slight, ochreous subterminal line, distally black-edged, interrupted at the veins, somewhat as in *leucotaenia*, but without the strong outward bend at R^3 of that species.

Underside of both wings purplish-fuscous, the proximal half clothed with rather short brown hair and practically unmarked; subterminal line much more distinct than above, pure white, broken into rather oblique lunules, becoming less sharply defined on posterior two-thirds of hind wing.

3,000 feet, December, 1919, one ♀.

Just possibly the missing female of *orcina* Fldr., but hardly seems to agree sufficiently, the subterminal line beneath being much more waved and irregular in *felderi* than in *orcina*, which would be a most unusual sexual variation in *Nyctipao*. In any case this would probably be a good subspecies, as three Amboina males of *orcina* in coll. Joicey differ materially from the type, rendering it probable that *orcina* (though labelled by Felder "Moluccas") is, like some other specimens of Lorquin's collecting, really from Celebes.

38. *Dermaleipa juno* Dalm. *ceramensis* subsp. nov.

♂ ♀, 74—90 mm.

Differs from *D. juno juno* in the generally smaller size (averaging about 85 mm. in *juno ceramensis*, well over 90 mm. in *juno juno*); in the generally brighter red of ventral surface of abdomen (especially in ♂); in the slightly exaggerated swelling of the costa of ♂ forewing; in the reduction of the black area of hind wing above, especially obliquely behind apex, where it occupies, as a rule, quite two-thirds of the wing from abdominal margin to apex in *juno juno*, little more than half the wing in *juno ceramensis*; in the bluish-white line making a slightly more acute angle behind M^1 in *juno ceramensis*, and being, as a rule, more broadly interrupted at fold; and in the dark terminal shading of hind wing of *juno juno* being usually absent or very slight in *juno ceramensis*. On the underside the ♂ of *juno ceramensis* is distinguished from *juno juno* by reduction of the yellow androconia on hind wing (answering to the reduction of the black area above); in

the ♀ the difference in size seems more noticeable than in the ♂ (the ♀ of *juno juno* averaging larger than the ♂, that of *juno ceramensis* averaging at least as small as the ♂).

Manusela, 6,000 feet, October to December, 1919, fifty-five ♂♂, sixty-two ♀♀.

Specimens from Java and Borneo (subspecies *elegans*, Van der Hoeven.) are somewhat intermediate between the Japanese and Indian form and the Central Ceram subspecies, being about the size of the latter with the blue band of hind wing intermediate; but the black area and terminal dark shading are as in typical *juno*. Although some Palaearctic and Indian aberrations seem to approximate towards the Ceram form, not a single Ceram specimen approaches the typical form; I have, therefore, regarded this as a good subspecies, even though the differences are somewhat slight.

39. *Lagoptera rubida* Wlkr. *velutina* Prout ♂.

♀, Ann. Mag. (9) iii. 172 (1919) (Dutch New Guinea).

♂, 83 mm.

Tegulae with a tuft of yellow hair at middle (disturbed); white band of hind wing slightly broader than in the ♀ (a racial difference?); slightly darker, more purplish brown in tone than in the ♀; fringe of hind wing apparently a little darker.

Fore wing beneath with some yellow hair in proximal half of cell; hind wing entirely ochreous (not only "with an ochreous tinge towards base," as in typical *rubida*), and clothed with very short androconial hair.

Manusela, 6,000 feet, October to December, 1919, one ♂.

40. *Anophiodes indistincta* sp. nov.

♀, 56 mm.

Head, palpus, antenna and thorax brown, tegulae with a medial black line, patagia with a black line towards the shoulders; pectus and hind legs whitish; middle and fore legs blackish, the segments tipped with white; abdomen greyish above, ochreous-grey beneath.

Fore wing above dark brown, intermixed here and there with pale reddish, the veins shot with purple; a few white scales on subterminal

line and a white spot on termen. Lines obscure, double, blackish, the subbasal only visible at costa and in fold; antemedial from one-fifth costa to one-fifth hindmargin, bent outward behind costa and inward to hindmargin, interrupted at the veins; postmedial from costa at three-fifths to three-quarters hindmargin, outwardly oblique to before R^3 , inwardly oblique from behind R^3 to hindmargin, interrupted at the veins; an ill-defined medial dark shade, excurved from costa at about two-fifths to near middle of hindmargin, indistinctly double on costal third; an ill-defined pale reddish reniform, with a black line near its proximal edge; subterminal line pale reddish, well-defined, bent inward behind costa and angled behind R^3 , obsolescent behind SM^2 , finely interrupted at the veins; a lunular white spot on termen behind R^3 , and reddish-violet marginal lunules in the other interspaces, proximally shaded with black; a slight dark marginal line; fringe blackish, with a fine pale line at base, and interrupted by ochreous opposite the white spot.

Hind wing smoky-brown, with a slight, diffused whitish median band from end of cell to tornus; fringe whitish, chequered with fuscous at apex and R^1 and from R^2 almost to fold, with a slight dark line at middle.

Underside of both wings smoky-brown, the hind wing with the basal half whiter except at costa; fore wing with the distal half of costa ochreous, and the white terminal spot reproduced below; hind wing with fringe chequered as above.

Manusela, 6,000 feet, October to December, 1919, one ♀.

41. *Ophisma pallescens* Wlkr. *intermedia* subsp. nov.

♂ ♀, 102—108 mm.

Intermediate between *pallescens pallescens* Wlkr. (from Sarawak) and *pallescens subplaga* Beth.-Bak. (from New Guinea), the black terminal patch on hind wing starting at or just behind SC^5 and ending about M^1 (though with a slight dark shade behind it to near tornus) and broader than in either of the other two forms, being sometimes nearly circular. Fore wing tinged with violet, the markings rather strong.

Hind wing above with the hair on posterior third a little redder than in either of the other two subspecies.

Manusela, 6,000 feet, October to December, 1919, eleven ♂♂, fourteen ♀♀.

42. *Parallelia subacuta* Beth.-Bak. *juncta* subsp. nov.

♂ ♀, 46—52 mm.

Averages slightly smaller than typical *subacuta*; a little darker in tone above and beneath. Differs chiefly in the reduced breadth of the medial pale band on the fore wing, the basal and postmedial dark patches being sometimes united behind the middle of wing in *subacuta juncta*, the antemedial line being usually more excurved and a little more oblique in this form than in typical *subacuta*. The postmedial line is usually a little more strongly bent outward behind costa, and rather more excurved about M¹ (more as in *joviana* Stoll) in *subacuta juncta* than in the type-form.

Manusela, 6,000 feet, October—December, 1919, ten ♂♂, six ♀♀; also one ♂, 4,600 feet, January, 1920.

Both the typical form and the Ceram race of this species vary considerably, but in the Ceram race the medial band almost invariably narrows a good deal towards the middle, whilst in the New Guinea form it appears always distinctly broader than in the majority of Ceram specimens.

DIPHTHERINAE.

The name *Momina* employed by Hampson for this subfamily rests on the acceptance of *ludifica* as "first species" type of *Moma*. According to generally accepted rules of nomenclature the type of *Moma* appears certainly to be *alpium* Osbeck (fixed by Lederer in 1857; *Acronyctinae*). Latreille first characterized the genus *Dipthera* (as *Dipthera*, Nouv. Dict. Hist. Nat. xxiii, 20 [1818]), describing *ludifica* and *aprilina*; H.—S., restricted to *ludifica* L. (Syst. Bearb. II, p. 176 [1843—5]) which becomes the type of *Dipthera* Latr. The genus "*Dipthera*" of Hampson thus becomes *Panthea* Hbn.

43. *Trisuloides trigonoleuca* sp. nov.

♂ 56—58 mm.

Head, thorax, palpus and antenna ochreous-brown with some white intermixed, tegulae tipped with white, patagia banded with dark-brown; abdomen brown, tinged with ochreous, the anal tuft pale ochreous; pectus, legs and abdomen beneath brownish, paler in one specimen than in the type.

Fore wing ochreous-brown shaded with dark-brown and irrorated

with white, the medial area tinged with chocolate-brown. Antemedial, medial and postmedial lines black, the antemedial (proximally) and the postmedial (distally) defined by white, nearly as in *sericea* Btlr.; reniform and orbicular ill-defined, nearly as in *sericea*; subterminal line white, strongly waved and dentate, proximally dark-shaded as far as the white definition of the postmedial line; a triangular white patch at tornus; fringe chequered dark-brown and whitish.

Hind wing yellow, with indications of a dark-brown line before anal angle and some brown hair on basal half of abdominal margin (both these are nearly obsolete in the type specimen); fringe chequered brown and white.

Underside of both wings with the proximal two-thirds bright yellow, the distal third and costal margin whitish irrorated with brown; a postmedial dark streak on costa of each wing and a paler-brown, diffused terminal patch; fringe as above. Hind wing with white patch and dark streak at tornus.

Manusela, 6,000 feet, October to December, 1919, two ♂♂.

Belongs either to Section I or Section II of Hampson; in the absence of the ♀ it is impossible to say which. Possibly nearest to *papuensis* Warr. or *sericea* Butl.

44. *Dipthera nigricatena* sp. nov.

♀, 52 mm.

Head, palpus and thorax white tinged with salmon-colour, with patches of deep black (one on the fillet; one on either side of tegulae, at middle; two patches each on the patagia; one on prothorax and six on metathorax); antennal shaft black, with some white at and towards base; pectus white; legs white, broadly banded with black, the fore legs and the tarsi with some pale-brown shading; abdomen above yellow with a dorsal black spot on each segment, the last two segments black, anal tuft brown; abdomen beneath white banded with black, the bands interrupted at middle except on last segment.

Fore wing white, slightly flushed with pale salmon-colour, the markings deep black. Small basal spots on costa before and behind SC; a dentate, inwardly-oblique subbasal band from costa at about one-fourth, ending near base of fold, distally angled behind costa and broadly interrupted on M; small spots on M and at fold, and a larger one on SM between subbasal band and antemedial line;

antemedial line from about one-third costa to two-fifths hindmargin, waved, proximally angled at costa and on SM and curved in cell, distally angled behind costa and curved behind M; orbicular a round black spot; an irregular medial band from middle of costa to middle of hindmargin, interrupted at SC, excurved round orbicular, much broadened on the veins behind M and at fold; reniform only defined by the curve of the medial line and a slight curved line on its distal edge; postmedial line from costa close to medial line to about three-fifths hindmargin, distally dentate on the veins, strongly excurved from behind costa to M^2 , the radials and M^1 blackened between postmedial line and reniform; two somewhat interrupted black lines between the postmedial line and the termen, both slightly excurved, the first thickened at costa, the second broadest about R^2 ; the veins blackened at termen; a black terminal line; fringe chequered black and white.

Hind wing yellow at base and along abdominal margin to tornus, broadly blackish on costal and terminal areas, a slight, pale, curved postmedial line interrupting the dark area; veins towards termen and terminal line deeper black; fringe as on fore wing.

Underside of both wings smoky-brown, very glossy, whiter towards base, with a pure white postmedial band, slightly excurved, preceded on each wing by a white medial spot on costa; fore wing with three minute white spots on costa towards apex; fringes chequered as above; some yellow hair at base of both wings, in cell of fore wing and along abdominal margin of hind wing.

Manusela, 6,000 feet, October to November, 1919, one ♀.

This species extends the known range of the genus *Dipthera*, which does not seem to have been previously recorded from further east than India and Ceylon.

PLUSIANAE.

45. *Plusia latistigma* sp. nov.

♂, 37 mm.

Head, thorax and palpus rufous-brown with some whitish irroration, tegulae and patagia tipped with whitish and banded with darker brown; abdomen above and beneath ochreous-brown, the dorsal crest on first segment dark-brown and very large; pectus brown; legs whitish-brown.

Fore wing violet-white, with a patch of cupreous olive-brown on medial area behind the cell, and cupreous olive-brown shading proximally to the subterminal line. Subbasal, antemedial and postmedial lines double, waved, oblique, the subbasal ending at fold, the antemedial obsolescent (bent outward?) from costa to M, the postmedial bent outward on SM²; pale mark behind cell Y-shaped, very broad at M; an olive-brown line from costa to M, proximally to the postmedial line; subterminal line near termen to behind SC⁴, then bent inward, leaving the termen conspicuously pale except for a strong, diffused dark spot on R³; a fine dark terminal line, broadening between the veins; fringe white with fine dark shading at middle and tips and with dark shading on distal half opposite the veins.

Hind wing brownish-white thickly irrorated with brown, the proximal half a little paler than the distal; traces of a dark discal spot; fringe as on fore wing.

Underside of fore wing greyish-brown, of hind wing whitish-brown, traces of a dark postmedial line, especially on the hind wing; hind wing with a discal spot; both wings with a fine dark terminal line; fringes as above.

Manusela, 6,000 feet, October to December, 1919, one ♂.

Belongs to Section IV, A, a, b¹, b², of Hampson. Perhaps nearest to *subsicens* Wlkr., from Australia.

OPHIDERINAE.

46. *Sypna achaeopsis* sp. nov.

♂, 48—55 mm.

Head, palpus, thorax and antennal shaft ochreous-brown, the head, tegulae and patagia more or less shaded with dark-brown; abdomen above ochreous-white (occasionally tinged with fuscous) with the crests deeper ochreous; abdomen beneath, pectus and legs whitish.

Fore wing typically with the basal two-fifths purple-brown, the area between medial and postmedial lines pale-ochreous or greenish-ochreous and the distal third ochreous-brown tinged with rufous. Lines somewhat as in *achaeoides* Wlkr., from Celebes, but the antemedial much more strongly bent outward behind costa, the medial almost straight (not excurved behind M, as in *achaeoides*) and the postmedial bent outward at costa (not just behind costa) and forming two separate wide

curves (before and behind R^1) instead of one large, little-interrupted curve; antemedial line usually with a white spot or streak at hind-margin; reniform and orbicular as in *achaeoides*; subterminal line usually indistinct, slightly oblique from costa to R^2 , waved and excurved to fold, obsolescent to tornus, sometimes with a proximal dark blotch in fold; termen and fringe as in *achaeoides*.

Hind wing shaped somewhat as in *achaeoides*, but rather more rounded along abdominal margin and with the apex less cut away; smoky-fuscous, with a straw-coloured medial half-band from costa, and the costa and costal half of termen pale straw-colour, the abdominal half of termen more or less tinged with pale-brown; all the shades much more diffused than in *achaeoides*, the straw-coloured shades sometimes increased or reduced; termen and fringe nearly as in *achaeoides*, but with the terminal lunules clearly defined behind SC^5 and R^1 , not only from behind R^2 to tornus.

Underside of both wings pale ochreous, irrorated with brown except on the basal half of fore wing from behind SC . Fore wing with broad oblique black medial and postmedial lines, a black discal dot and broadly diffused subterminal patch from behind R^2 to near tornus. Hind wing with a minute celldot, waved medial and postmedial lines, a broad, diffused band distally to postmedial line, sometimes with a slight dark half-line from costa beyond it.

♀, 54—62 mm.

Differs from the ♂ in size, in the slightly broader wings, the generally rather more ochreous tone of the fore wing and in the broader and rather longer medial half-band on the hind wing. Underside generally paler, with the lines rather less distinct, especially at costa.

Ab. (1) *fuscimaculata* ab. nov., ♂, ♀, has the whole fore wing more or less thickly irrorated with dark-brown, and a purple-brown band proximally to the medial line; hind wing and abdomen a little darkened.

Ab. (2) *fuscofasciata* ab. nov., ♂, ♀, has a deep purple-brown band proximally to the antemedial line and dark purple-brown shading distally to the postmedial line.

Ab. (3) *variegata* ab. nov., ♂, ♀, is similar, but has the area between medial and postmedial lines largely suffused with white.

Ab. (4) *defuscata* ab. nov., ♂ ♀, has the white medial suffusion and a white shade behind costa, near apex, but is without the dark purple-brown bands.

Ab. (5) *rhodozona* ab. nov., ♂, ♀, has the whole fore wing from antemedial to subterminal lines suffused with pinkish-white.

Numerous other lesser or intermediate aberrations also occur.

Manusela, 6,000 feet, October to December, 1919, sixty ♂♂, a hundred and twenty-four ♀♀.

Nearest to *S. achaeoides* Wlkr., but seems quite a good species.

47. *Sypna admiratio* sp. nov.

♂, 65 mm.

Head, thorax and palpus predominantly black-brown, palpus ochreous-brown in front, thorax shot with purple and sparsely irrorated with white; abdomen above brownish-grey with the crests dark-brown; abdomen beneath and pectus dark-brown; legs predominantly dark-brown, with some ochreous shading beneath and on the joints.

Fore wing above deep purplish-brown, irrorated with white; lines blackish, indistinct, somewhat as in *punctosa* Wlkr., from the N.W. Himalayas, but the postmedial (the least indistinct) rather more strongly bent outward behind the costa and retracted to the middle of wing on M^2 (instead of to scarcely more than three-fifths from base) and ending near middle of hindmargin (instead of nearly two-thirds along it); white terminal spots slightly larger and nearer termen than in *punctosa*; reniform a nearly round white spot surrounded by four or five white dots (much as in some forms of *punctosa*).

Hind wing dark brownish-grey, a little paler towards base, with a slight, pale subterminal line from behind M^1 to tornus; fringe ochreous-brown with a thick blackish line at middle and fine black lines at base and tips.

Underside of both wings brown irrorated with blackish, with pale discal lunule and diffused dark postmedial line; fore wing with a pale shade distally to postmedial line and a diffused dark subterminal shade beyond it; both wings less contrasted and with the postmedial line much more curved than in *punctosa*.

Manusela, 6,000 feet, October to December, 1919, one ♂.

Nearest *punctosa* Wlkr. and *biocularis* Moore (from Sikkim) but appears to me quite distinct from both. One large ♀ from Assam (erroneously, as it appears to me) placed as *punctosa* in coll. Brit. Mus., might well be the Indian race of this species.

48. *Leistera pulchristrigata* Beth.-Bak. *denuda* subsp. nov.

♂ ♀, 70—80 mm.

Averages slightly smaller than typical *pulchristrigata*; hind wing in both sexes with the medial blue band somewhat broader, especially between R^1 and fold, where the distal side is a little more extended towards termen. In the ♀ the medial line of the fore wing is whiter than in typical *pulchristrigata* and generally two or three times as broad, and the conspicuous rings behind the origin of R^3 and M^1 are entirely wanting, the two sexes being alike except for the broader medial band of the ♂, and the absence in the ♀ of the white-ringed black spot proximally to this band. One ♀-ab. has the medial line pale chocolate, but it retains its extra breadth.

Manusela, 6,000 feet, October to December, 1919, twenty-nine ♂♂, thirty-one ♀♀; 3,000 feet, October to November, 1919, one ♂, one ♀.

49. *Leistera splendens* Beth.-Bak.

This shows an exactly parallel racial variation with *pulchristrigata*, which seems to confirm my previous impression that *pulchristrigata* and *splendens* are forms of the same species.

Manusela, 6,000 feet, October to December, 1919, four ♂♂, one ♀.

As the *Leistera* ♀♀ show distinct spines on the mid-tibia, and the ♂♂ probably also possess them, though entirely concealed by hair, this genus ought to come in Hampson's subfamily *Catocalinae*; but Hampson, having apparently overlooked the spines, places the genus in his *Noctuinae* and in this paper I have given it the position which it occupies in coll. Brit. Mus.

50. *Ericeia gonioptila* sp. nov.

♂, 46—50 mm.

Head, thorax, abdomen and legs greyish-fawn colour, the abdomen paler than the thorax. Hind tarsus clothed with long hair, gradually decreasing in length to the fifth segment. Cell of fore wing beneath clothed with long down-turned hair.

Wings greyish-fawn colour; the reniform and subterminal band pale ochreous-brown; ante- and postmedial lines blackish, macular. Lines indistinct, apparently nearly as in *inangulata* Gn., but fore wing always

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with a rather large diffused blackish spot on subterminal line at fold, with two smaller black spots behind it. Underside much as in *inangulata*, but with the ground colour more uniform in tone (lacking the pale ochreous shades on basal half of hind wing) and with the lines usually rather less distinct, sometimes reduced in number.

♀, 50—52 mm.

Slightly browner in tone than the ♂, but entirely wanting the bright ochreous or reddish tone which is often found in the ♀ of *inangulata*. Subterminal black spots slightly larger and more conspicuous than in the ♂; subterminal line with the first two angles behind costa filled in with white.

Manusela, 6,000 feet, October to December, 1919, nine ♂♂, three ♀♀.

Distinguished from *inangulata* Gn., chiefly by the greyer tone of colour and by the slightly narrower fore wing and more angled hind wing of the ♂. The difference of shape may be indicated by the following table of measurements:—

Fore wing		<i>inangulata</i>		<i>gonioptila</i>	
Costa, from base to apex	...	22 mm.	...	20½ mm.	
SM ² " " tornus	...	16½ "	...	14½ "	
Termen at SM ² to apex	...	12 "	...	10½ "	
Hind wing					
Base to termen at SC ⁶	...	16½ "	...	14½ "	
" " " R ³	...	17 "	...	16 "	
" " " SM ²	...	16 "	...	13½ "	

A form occurring in New Guinea, which does not appear to have yet received a name, may probably be a race of this species.

51. *Ericeia amplipennis* sp. nov.

♂, 57 mm.

Head, body and legs pale grey tinged with ochreous; palpus and tibial hair somewhat darker. Hair on hind tibia of only moderate length; the first two segments of hind tarsus only (apparently) clothed with shortish hair.

Wings pale grey tinged with ochreous with slight dark irroration; markings indistinct, apparently nearly as in *inangulata* Gn. but with the medial line more excurved round the reniform, which is reddish-

brown, rather strongly marked; antemedial line apparently oblique and waved (not erect and waved, as in most *Ericeia* species) but very ill-defined; the dotted black postmedial line on the hind wing unusually straight.

Underside very pale ochreous-grey, irrorated as above, with no definite markings but an ill-defined waved postmedial line, crossing both wings, a diffused discal spot and a smaller spot in cell on the fore wing and a slight celldot on the hind wing.

4,600 feet, January, 1920, one ♂.

A ♀ from Manusela, 6,000 feet, October to December, 1919, probably belongs to this species.

♀, 53 mm.

Differs in the rather weaker reniform and in the stronger lines, which are dotted with black, especially at the apex and distal part of hindmargin of fore wing and towards abdominal margin of hind wing. Antemedial line *erect* and waved. Underside darker than in the ♂, with the outer lines indistinctly defined. General tone more ochreous than in the ♂.

Unusually broad-winged for an *Ericeia* species; fore wing with the base of costa somewhat unusually rounded. Does not seem to agree with any previously described species.

52. *Platyja cyanocraspis* Hmps. *lecerfi* subsp. nov.

♂, 76 mm.

Head, body and fore wing above as in the type form from New Guinea except that the termen is a little paler, more violet, and is divided from the dark area by a sharper white line.

Hind wing rather blacker in tone than in average New Guinea specimens, with the termen more contrasted (as on the fore wing) and with a large pure white apical patch.

Underside nearly as in typical *cyanocraspis*, but with the postmedial line more indistinct (almost entirely without the white dots on the veins) and with stronger blue-white irroration at apex of fore wing.

♀, 78 mm.

Thorax and fore wing redder and somewhat paler than in the ♂; the termen of both wings deeper violet, rather broader than in the ♂, crossed by a strong dark terminal line and proximally dark-edged; lines and annulus of reniform predominantly bluish-white; fore wing with a round dark orbicular; posterior two-thirds of distal half of

hind wing thickly irrorated with bluish-white, shading into the dark proximal area. Underside of hind wing irrorated with bluish-white; both wings beneath with dark discal spot, and bluish-white postmedial line. Slightly paler at apex of hind wing above and of fore wing beneath than ♀♀ from New Guinea, but differs much less than in the ♂.

Manusela, 6,000 feet, October to December, 1919, one ♂, one ♀.

It is possible that *cyanocraspis* Hmps. may have to sink to *porphyrodes* Beth.-Bak., the type of which I have, unfortunately, not seen. *Porphyrodes* appears to be without the pale distal margin of fore wing; but this shows a tendency to be lost in worn specimens of *cyanocraspis*.

53. *Ommatophora burrowsi* sp. nov.

♂ ♀, 59 mm.

Head, thorax, abdomen, legs, palpus, and antenna as in *fulvastra* Gn. Fore wing much as in *fulvastra* Gn.; the general tone rather paler and less contrasted than in Philippine specimens; antemedial line waved and excurved, a little less oblique than in *fulvastra*, usually without any strong angle at fold; postmedial line rather more waved from costa to R¹ than in *fulvastra*, a little more inwardly oblique from R¹ to M¹, with a slight proximal angle about R²; subterminal and terminal lines much as in *fulvastra*.

Hind wing brown, almost entirely lacking the pale apical spot of *fulvastra*; markings much as in that species, but the medial line straight and oblique (or almost incurved) behind R¹ not excurved as in Philippine specimens.

Underside of both wings almost uniform brown; hind wing with the distal third somewhat darkened, two white spots near termen (behind R¹ and M²), a black ring filled in with red-brown on discocellulars and slight waved medial and postmedial lines. Fore wing with faint waved medial and postmedial lines and slight subterminal shade.

Manusela, 6,000 feet, October to December, 1919, two ♂, seven ♀. Also in coll. Joicey from Amboina, Key and Aru Islands. One specimen in coll. British Museum from Ceram in series of *fulvastra* belongs to this species.

Extremely near to *fulvastra* Gn. and *luminosa* Cr. The three might well be all races of one species, but Mr. Burrows, who has examined the genitalia of *fulvastra* specimens from India and Borneo and *burrowsi* from Ceram, considers them distinct species.

54. *Athyrma perficiens* Wlkr., *olivacea* subsp. nov.

♂ ♀, 46—53 mm.

Differs from Indian specimens of *perficiens* Wlkr. in the more olive-grey (less ochreous) tone of ground-colour, the larger antemedial black patch (which extends to near base of hindmargin), the rather darker costal shading before postmedial dark patch and at apex, the much straighter distal edge of the postmedial black patch (which is sharply defined distally by a white line), and especially in the straight, red-brown postmedial shading from costa to hindmargin (which in *perficiens* *perficiens* is obsolete on the radials and angled inwards on M²). Underside rather darker grey than in typical *perficiens*. Possibly a distinct species, but probably a race of *perficiens*, with which it agrees perfectly in margins and fringes, as well as structurally in the presence of a grooved band along the distal half of R¹ of the hind wing.

Manusela, 6,000 feet, October to December, 1919, two ♂ ♂, one ♀.

Hampson in his "Moths of India" sank this species to *bubo* Hbn., but it is at once distinguishable in the ♂ by the grooved band on R¹ of the hind wing, which is entirely absent in *bubo*. Both species are represented in Central Ceram, occurring together but very distinct.

55. *Athyrma pratti* (Beth.-Bak.) ♀.

♂, *Hypaetra pratti* Beth.-Bak. Nov. Zool., xiii, p. 262 (1906).

♀, 52—54 mm.

Head, thorax, abdomen and legs much as in the ♂.

Fore wing brown; some violet irroration, most conspicuous at base and near termen. Subbasal, antemedial and postmedial costal spots as in the ♂; antemedial black patch proximally as in the ♂, distally nearly erect instead of oblique (reducing the size at hindmargin); black orbicular spot rather conspicuous; medial lines almost obsolete; postmedial black patch only represented by a small black patch between R¹ and R² and a smaller spot behind M¹, the two being connected by a thick black line which is retracted to the origin of M¹ after the second black spot, then oblique and waved to hindmargin at about two-thirds.

Hind wing and underside of both wings much as in the ♂.

Manusela, 6,000 feet, October to December, 1919, five ♀ ♀, five ♂ ♂.

Possibly a new species, but seems to me probably the missing ♀ of *pratti*, the body, shape and general tone being the same, although the

postmedial area shows considerable differences and the antemedial black patch is also somewhat different.

56. *Rivula manuselensis* sp. nov.

♀, 21 mm.

Head, body and palpus above whitish; palpus on outer side and beneath, pectus, legs and abdomen beneath ochreous-brown.

Fore wing whitish, tinged with ochreous-brown (especially at distal margin). Middle of wing much rubbed but showing traces of brown subbasal, antemedial and medial lines, the antemedial apparently evenly excurved from about two-sevenths costa to two-sevenths hindmargin, the medial excurved from middle of costa to cell, thence oblique or slightly incurved to about two-fifths hindmargin; a black discal dot at each angle of cell; postmedial line double, macular very oblique from costa near origin of medial line to SC⁶ near termen, thence inwardly oblique to hindmargin at about five-sevenths (apparently slightly angled in at fold, but worn); a row of interneural black and white dots close to termen; fringe white thickly striated with brown and with a brown line near base.

Hind wing smoky-brown, slightly darkened at termen, with a fine pale line at base of fringe.

Fore wing beneath brown, paler on posterior third, the veins, costa and termen tinged with ochreous. Hind wing white, the veins towards costa and termen tinged with ochreous; some brown irroration at costa and termen, a dark discal spot and curved postmedial line.

Manusela, 6,000 feet, October to December, 1919, one ♀.

Seems nearest to *aroa* Beth.-Bak., but has the postmedial line darker and less curved behind SC⁶.

Agrees in structure with *R. sericealis* Schiff. except in R² of the hind wing, which arises almost from angle of cell instead of from before angle, as in *sericealis*; R⁴ and M¹ of hind wing stalked to about one-third.

57. *Othreis cajeta* Cr. *talboti* subsp. nov.

♂ ♀, 98—106 mm.

Differs from *cajeta cajeta* Cr. chiefly on the hind wing, where the black border is incurved from costa to R', but scarcely angled on R' (as in *cajeta cajeta*). On the underside this difference is more noticeable

than above, and *cajeta talboti* further differs from *cajeta cajeta* in having the apex of both fore and hind wing very little paler than the rest of the border; in *cajeta cajeta* the postmedial half-band of the hind wing is usually broadest posteriorly (at the fold), in *cajeta talboti* it is of almost even breadth or broadest *anteriorly* (about M^1); the yellow band proximally to border of fore wing is broader in *cajeta talboti* than in *cajeta cajeta*, especially in the ♀. The ♀ above is rather more variegated than in typical *cajeta*, with more or less pink and violet admixture on the medial area (where there is a pale patch distally to the reniform, more marked in one ♀ than in the other); both ♀ ♀ have four diffused black terminal spots (behind veins R^1 to M^1) set on an irregular, narrow, pinkish-white terminal band.

Manusela, 6,000 feet, October to December, 1919; two ♂ ♂, two ♀ ♀.

A ♂ in coll. Joicey, from Amboina (?), measuring only 86 mm. evidently belongs to this race, though the hind wing is less orange in tone than in the other four specimens and the fore wing is slightly paler and more chocolate-brown than in the other two ♂ ♂.

Possibly not actually a subspecies of *cajeta* but only an extremely close ally, as the costa appears slightly more arched, the third joint of palpus is a little less clubbed and the incision at hindmargin of fore wing appears a shade longer and less deep; the two latter points are, however, liable to be influenced by the condition of the insect (none of the specimens are perfect), as they are largely due to the presence or absence of a tuft on the palpus and of scale-teeth on margin of fore wing. Very near also to *fullonica* L.

58. *Othreis prattorum* sp. nov.

♂, 96—98 mm.

Head, palpus, thorax, abdomen and legs as in *ancilla* Cr.

Fore wing olive-brown, shot with violet-white and suffused in parts with red-brown. Lines much as in *ancilla* Cr. and *iridescens* Lucas, but the antemedial slightly more excurved than in either of those species.

Hind wing orange-yellow with some brown hair at base and a broad black terminal band, costally nearly as broad as in *iridescens* but ending in a point at fold (not continued to anal angle); one specimen shows faint traces of a postmedial black spot behind M^2 ; fringe black except from fold to anal angle.

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♀, 90 mm.

Coloured nearly as in a rather strongly contrasted ♀ of *iridescens*, but with the green subterminal spots and the large green medial patch more as in *ancilla*, the posterior bordering of antemedial line being decidedly broader than even in *ancilla*; the reniform greenish with medial and distal thick black lines. Hind wing as in the ♂ but with the postmedial black spot much larger (reaching from M^2 to SM^2).

Underside of both sexes much as in *iridescens*, except for the narrower black border of hind wing and the rather paler, less bright tone of the yellow shades.

Manusela, 6,000 feet, October to December, 1919, six ♂♂, one ♀.

Forms a transition between *ancilla* Cr. and *iridescens* Lucas, suggesting that the three forms are all races of one species.

59. *Oxygonitis sericeoides* sp. nov.

♂, 50 mm.

Antenna, palpus, head, thorax, abdomen and legs, much as in *sericeata* Hmps., but head and thorax rather greyer, without the slight ochreous tinge.

Wings coloured much as in *sericeata*, but rather more uniformly grey-brown. Fore wing angled at apex and R^2 , but less strongly than in *sericeata*, and quite without the strong inward curve behind R^2 of that species; hind wing shaped about as in the ♀ of *sericeata* (rather fuller at apex than in *sericeata* ♂). Fore wing with antemedial line and large, indistinct reniform much as in *sericeata*; orbicular reduced to a white point; postmedial line straight from behind SC^5 to hind-margin; subterminal line indistinct, minutely waved, bent outward to tornus; fringe as in *sericeata*.

Hind wing much as in *sericeata*, but with the postmedial and subterminal half-lines less distinct.

Underside of both wings pale ochreous-grey sparsely irrorated with brown, whiter in fold of fore wing and on proximal half of hind wing; fore wing with slight dark discal streak and postmedial line, and with some indistinct subterminal shading; fringes of both wings with dark tips.

Manusela, 6,000 feet, October to December, 1919, one ♂.

But for the difference in shape should almost certainly be regarded as a race of *sericeata*, Hmps.

60. *Lineopalpa horsfieldi* Gn. chlora subsp. nov.

♂ ♀, 32—42 mm.

Differs from typical *horsfieldi* chiefly in the rather greener ground-colour and redder tone of markings; altogether rather brighter and more contrasted than the type-form. Antemedial line usually bent inward behind fold instead of more or less oblique throughout, but varies in both forms; postmedial line generally more angled in fold in *horsfieldi chlora* than in the type-form. Underside of both wings rather brighter and more sharply marked than in typical *horsfieldi*.

A very variable species in Ceram. Some of the principal aberrations are named below.

Ab. *albistriga* ab. nov. has a broad white streak behind M and M² from base to postmedial line, the reniform and a band distally to postmedial line pale green, narrowly edged with white. ♂ only.

Ab. *albifascia* ab. nov. has the reniform and postmedial distal band pure white only slightly shaded with green. ♂ only.

Intermediates between these two forms and between them and the type-form occur in ♂ or ♀.

Ab. *albimaculata* ab. nov. has the reniform with large outstanding anterior and posterior white spots. ♂ ♀.

Ab. *diffusisigna* ab. nov. has most of the distal edge of reniform lost in a pale patch extending to postmedial line. ♀ only.

In some forms the green lines of fore wing are much brighter than in others; the fore wing beneath is sometimes strongly tinged with rufous.

Manusela, 6,000 feet, October to December, 1919, seven ♂♂, twelve ♀♀; 3,000 feet, October to November, 1919, one ♂; 4,600 feet, January, 1920, one ♂, one ♀.

61. *Savara longipectinata* sp. nov.

♂, 44—46 mm.

Head, thorax, palpus, and antenna greyish dove-colour, the frons, clavola beneath and palpus whitish; abdomen greyish dove-colour with whitish lateral streaks; pectus and legs whitish shaded with dove colour, femora, and tibiae with some darker shading; fore tarsus banded with black.

Fore wing with the proximal three-fifths uniformly greyish dove-colour, the distal two-fifths olivaceous (in one specimen broadly pale ochreous distally to the subterminal line); apex bluish-white; lines

obsolescent (the dotted subterminal the least indistinct), apparently much as in *contraria* Wlkr., from Sarawak, of which this may just possibly be a local race, though the length of antennal pectinations differs, the shape of fore wing agrees rather with *latimargo* Hmps., from Burma, and it differs also from *contraria* in the entire absence of the antemedial pale band, which is nearly always present in that species; some diffused dark shading about the postmedial line and at termen; a fine dark terminal line, broken by slight whitish spots at the veins; fringe dark purplish brown.

Hind wing nearly as in *contraria*, but a little more contrasted, with dark terminal shading; costa conspicuously white.

Underside of both wings ochreous-white irrorated with pink, the posterior half of fore wing (except at termen) tinged with fuscous; postmedial line nearly as in *contraria*, but rather more strongly bent outward from costa, stronger and almost broken into spots by the pale veins; fore wing with moderately strong subterminal line and some dark suffusion at termen.

♀, 44 mm.

Almost without the olivaceous distal shades of the ♂; fore wing with double, dotted white postmedial line and a few white antemedial dots, as in *contraria*; underside greyer than in the ♂, with the dark postmedial line weaker, more continuous, and the subterminal almost obsolete.

Manusela, 6,000 feet, October to December, 1919, two ♂♂, one ♀.

♂ antenna with the pectinations five or six times diameter of shaft in length, longer than in any other *Savara* species known to me.

62. *Anomis bicolor* sp. nov.

= *Cosmophila bicolor* Warr. MSS.

♂, 42—48 mm.

Head and thorax ochreous-brown, patagia usually with a few white scales, sometimes tinged with rufous; abdomen above pale greyish-ochreous, usually shaded with reddish-grey; abdomen beneath, pectus and legs deeper greyish-ochreous, the pectus and tibiae with some brighter golden shades, fore-tibia with a tuft of pure white hair.

Fore wing typically ochreous-brown with a slight silvery sheen between postmedial and subterminal lines; markings often obsolescent, the most distinct being a costal white spot at origin of post-

medial line; lines rufous-brown, sometimes with white spots on the veins; antemedial oblique from two-sevenths costa to two-fifths hindmargin, angled outward at and behind M; postmedial from five-sevenths costa, irregularly waved and dentate to M¹, where it is strongly angled inward to behind reniform, thence nearly straight to three-fifths hindmargin; orbicular a dark-outlined white point; reniform usually consisting of anterior and posterior white points joined by a rufous line; a slight rufous subterminal shade; an indistinct fine marginal line; fringe tinged with rufous.

Hind wing ochreous-white almost entirely suffused with pale-rufous.

Underside of both wings ochreous-white, the fore wing except at margins suffused with rufous; anterior half of fore wing irrorated with rufous and fuscous, and with traces of a strongly curved, waved dark postmedial line with white spots on the veins, and of a slight dark, curved subterminal shade; fringes of both wings tinged with rufous and tipped with white.

♀, 49—52 mm.

Usually darker and redder than the ♂, with the markings even more indistinct, except the white spots at costa and on lines and stigmata; the silvery gloss over-laying a darker shade than in the ♂.

Manusela, 6,000 feet, October to December, 1919, eight ♂♂, nine ♀♀. There are also two ♂♂ from Wandamman Mountains, Dutch New Guinea, in coll. Joicey, and a ♂ and ♀ without locality.

Distal margin of fore wing usually little angled at R³, but otherwise quite a typical *Anomis* species. A ♂ from New Guinea in coll. Roths. bears the name *Cosmophila bicolor* Warr., but the species does not appear to have been published.

63. *Avitta longicorpus* sp. nov.

♂, 55 mm.

Antenna laminate, with a single bristle on each plate.

Head, palpus, and thorax brown tinged with rufous; abdomen very long, grey, clothed with some rough brown hair; body beneath and legs whitish, the mid- and hind tibia and tarsus shaded with greyish-brown, the fore femora clothed with long black-brown hair.

Fore wing grey-brown tinged with richer brown on anterior half

of base and along proximal two-thirds of costa; six rather indistinct waved lines (the ordinary five and a second subterminal); the antemedial nearly erect, from about one-third costa to nearly two-fifths hindmargin; the postmedial bent outward from costa at about three-fifths to SC⁵, very slightly excurved to three-fifths hindmargin; the other lines more or less equidistant, the subbasal and medial nearly erect, the two subterminals excurved; reniform rectangular, erect, closely filled in with dark-brown irroration; a slight dark patch between the two subterminal lines from about SC⁵ to R⁸; fringe almost unicolorous with wing, with a slight pale line at base.

Hind wing much flattened from M¹ to anal angle, ochreous-grey with a broad dark discal spot and a diffused dark terminal band, narrowing to anal angle; fringe ochreous.

Underside of both wings whitish with a large round black discal spot, a slight waved postmedial line and diffused subterminal shade (the two latter markings more distinct on hind wing than on fore wing).

Manusela, 6,000 feet, October to December, 1919, one ♂.

Belongs to the same section of genus as *subsignans* Wlkr., but the type of that species (from Canara) and a ♂ from Ceylon have the body of normal length and the hind wing not flattened. One ♂ from St. Aignan in coll. Brit. Mus. (erroneously placed under *subsignans* Wlkr.) may probably belong to a small race of *longicorpus*.

HYPENINAE.

64. *Catada alboapicalis* Beth.-Bak. *minuens* sp. nov.

♂ ♀, 36—38 mm.

Differs from typical *alboapicalis* in the reduced white apical patch (which in the type-form extends along almost the whole distal third of costa and almost half way down the distal margin, but in *C. Ceram* specimens occupies little more than one-quarter of costa and scarcely two-fifths of distal margin), in the more bent antemedial line (almost evenly excurved in the New Guinea form, bent inward in cell and outward to hindmargin in *Ceram* specimens), and, on the hind wing, in the ochreous patches being rather larger and paler and the silvery marginal line a little more pronounced and, especially, in the more strongly angled postmedial line in *Ceram* specimens.

Manusela, 6,000 feet, October to December, 1919, one ♂, five ♀♀.

This species does not appear to be a true *Catada*, but as the *Hypheninae* are at present unworked in coll. Joicey, and as Hampson has a generic name in MSS. for *alboapicalis* Beth.-Bak, I have made no alteration in the genus.

65. *Simplicia nitida* sp. nov.

♂, 30 mm.

Palpus nearly as in *rectalis* Ev., the third segment slightly fringed with hair above. Antenna with long fasciculate cilia and bristles. Fore wing with SC⁵ very shortly stalked with SC², SC³ and SC⁴, neuration otherwise as in *rectalis*.

Head, body and legs whitish tinged with ochreous-grey; outer side of palpus and antennal shaft a little darker, browner.

Fore wing ochreous-white irrorated with brown, especially on the margins (more broadly at distal margin); three almost straight, nearly erect fine brown lines at equal distances apart, the first medial, from about one-third costa to one-third hindmargin, the third subterminal, from near apex to very near tornus, the medial line proximally, the postmedial and subterminal lines distally pale-outlined, all three bent inwards at costa; reniform represented by two brown points (at the angles of cell); a fine dark terminal line thickened between the veins; fringe brown with a pale line at base.

Hind wing ochreous-white with a slight distal spot, a very indistinct postmedial line (almost obsolete on anterior third of wing) and a fine dark terminal line.

Both wings beneath whitish (the fore wing slightly darkened) with slight discal spots and postmedial and subterminal lines; the medial and terminal lines of fore wing almost obsolete.

Manusela, 6,000 feet, October to December, 1919, one ♂.

66. *Simplicia clarilinea* sp. nov.

♀, 35 mm.

Palpus much as in the last species, the fringe of hair on third joint above apparently longer (in *nitida* it is slightly damaged); antenna with moderately long bristles and very short cilia. Fore wing with SC⁵ shortly stalked with SC², SC³ and SC⁴; R¹ from angle of cell. Hind wing with R⁵ and M¹ almost stalked, R² from angle of cell (which should remove this species to the *Ophiderinae* [*Noctuinae* of Hampson] according to his key); but as the neuration is very little different in

rectalis Ev. and the palpus of *clarilinea* is unmistakably Hypenine I have placed this species provisionally in *Simplicia*, though it should possibly belong to a closely-related genus.

Head and body white, the antennal shaft, palpus and legs ochreous-brown.

Fore wing white sparsely irrorated with brown, the costa and lines golden, the medial line distally, the postmedial and subterminal lines proximally shaded with olive-brown; the medial and subterminal lines nearly as in *nitida*, the postmedial angled outward behind costa, then slightly oblique inward; reniform a fine olive-brown streak; a fine dark terminal line; fringe whitish at base, greyish at tips.

Hind wing ochreous-white with some ochreous hair in fold; a slight brown, angled subterminal streak in fold and fine pale-brown terminal line.

Both wings beneath ochreous-white, the fore wing with costa a little deeper yellow and with slight, greyish postmedial and subterminal lines.

4,600 feet, January, 1920, two ♀ ♀; Manusela, 6,000 feet, October to December, 1919, one ♀.

67. *Hydrillodes lugens* sp. nov.

♀, 38 mm.

Third segment of palpus very long (fully two-thirds length of second segment) with proximal two-thirds hairy above, apex naked, the hair expanding to a tuft at middle of segment. In build and neurulation seems to agree with *Hydrillodes lentalis* Gn., though the palpus is longer than in that species.

Head, thorax, palpus and antennae blackish-brown with some metallic purplish scales visible in a strong light; abdomen above and beneath cinereous-brown, the anus tinged with ochreous; pectus and legs black-brown, the joints of legs whitish.

Fore wing ochreous-brown, almost entirely suffused with black-brown, with a pale patch on the disc interrupted by a sinuous dark postmedial line; slight traces of a pale waved antemedial line from one-fourth costa to two-sevenths hindmargin; postmedial line somewhat oblique, bent outward from near middle of costa to R^2 and angled inward in cell and fold; an ill-defined pale subterminal line, strongly excurved between SC^4 and R^2 , and between R^2 and fold; fringe blackish, with a slight pale line at base.

Hind wing nearly uniform grey-brown, with traces of a pale post-medial shade.

Both wings beneath smoky-brown; hind wing with the base a little paler and with a diffused discal spot, a diffused curved postmedial line from about three-fifths costa to four-fifths hindmargin and a slight dark subterminal shade.

Manusela, 6,000 feet, October to December, 1919, one ♀; 4,600 feet, January, 1920, one ♀.

A single ♂, from the former elevation, undoubtedly belongs here, but as it is unfortunately much discoloured and the head is missing it is only possible to state that it matches the ♀ in size and shape of wings, the hind wing above and both wings beneath are paler, with the markings better defined (including a slight discal spot on fore wing), the fore wing above appears ochreous on proximal half, with a sharply-defined black discal spot, and dark brown on distal half.

The costa of fore wing is slightly swollen at shoulder, with a thick hair-tuft beneath. Legs apparently without special characters.

Perhaps nearest to *Hydrillodes funestalis*, Wlkr. (*Bleptina funestalis*); cannot be an aberration either of *Echana abavalis* Wlkr., or of *Hydrillodes repugnalis* Wlkr. (both of which occur in C. Ceram), as it differs from both in the third segment of palpus.

68. *Bocana pallidisigna* sp. nov.

♂, 28 mm.

Antenna with long bristles and very short cilia. Palpus with the second segment a little straighter than in *B. manifestalis* Wlkr., third segment rather shorter than in *manifestalis* (not much more than half the length of second), with tuft of hair above, the apex naked; aroole a little broader than in *manifestalis*; R^2 and M^1 of hind wing even more shortly stalked. Both wings slightly angled about R^2 . An *Adrapsa* species, according to Hampson's key in the "Moths of India," but nearer to *B. manifestalis* than to *A. ablualis* Wlkr., so I place it in *Bocana* rather than in *Adrapsa*, though it does not match perfectly with the type of either genus.

Head, body and legs brown with a few white scales interspersed, the tarsi paler, more ochreous.

Fore wing with the proximal half pale brown, the distal half darker brown; a round creamy-white terminal spot behind R^1 ; antemedial, postmedial and subterminal lines and a discal dot white, the antemedial line distally and the postmedial and subterminal lines proximally bordered with dark-brown; antemedial line waved, bent outward from

two-sevenths costa to middle of cell, nearly erect to one-fifth hindmargin; postmedial line waved, bent outward from near middle of costa, nearly erect to R^3 , bent inward to M^2 and nearly erect to hindmargin at about three-fifths; subterminal line waved, strong from costa to R^3 (where it is slightly angled outward), obsolescent and slightly incurved to hindmargin; a dark terminal line, thickened between the veins; fringe dark-brown with a lunular pale line at base.

Hind wing reproducing the coloration and pattern of the fore wing but with the medial area darker, the white discal spot larger, the postmedial line stronger and the subterminal line weak throughout; the creamy-white terminal spot behind R^1 also weaker than on fore wing. Postmedial line bent outward and more strongly waved between R^1 and R^3 .

Underside of both wings violet-grey with the lines (especially the subterminal) broadly defined by dark-brown; apex and posterior half of termen on both wings dark-brown; anterior half of termen (except apex) to behind R^2 yellow. Discal spots and outer lines as above, hind wing with an additional straight brown line proximally to the discal spot. Fringes as above.

Manusela, 6,000 feet, October to December, 1919, one ♂.

Appears superficially nearest to *Adrapsa geometroides* Wlkr. (*Lusia*, *praeocc.*) from Ceylon, but does not agree in palpus, *geometroides* being very near to *A. abluialis* in palpus—probably a true *Adrapsa*.

69. *Hypena euphyes* sp. nov.

♂, 35 mm.

Antenna ciliate, with the ciliation not quite as long as diameter of shaft. Palpus with the second segment thickly hairy beneath, hairy also above, especially at the extremity; third joint short, triangularly tufted with hair, leaving the extreme end naked, the hair longer above.

Head, thorax, palpus, and antenna blackish with some scattered violet-white scales; abdomen dark cinereous-brown above, a little paler beneath; femora and legs blackish, the mid-femora and mid-tibia paler beneath; tarsal joints pale.

Fore wing dark-brown thickly irrorated with violet scales distally and sparsely so proximally to the postmedial line, a little more thickly at base; a slight, diffused, blackish antemedial line from costa at nearly one-third to two-sevenths hindmargin, slightly incurved about M ; a slight, oblique, broad medial dark shade; traces of a black orbicular

spot and a reniform streak; postmedial line dark red-brown, from three-fifths costa to three-fifths hind margin, nearly straight but slightly excurved behind SC^5 ; subterminal line proximally black-outlined and with some proximal dark suffusion on anterior two-fifths, waved and dentate, strongly excurved from R^2 to M^2 and angled outward on SM^2 ; a triangular dark patch on anterior half of termen, extending to beyond subterminal line from SC^5 to R^2 ; a row of interneural terminal pale lunules; a broad dark terminal line; fringe blackish with a fine violet line at base.

Hind wing grey-brown, rather paler towards base and with some violet irroration on distal fourth of wing (especially about R^3 and M^1); termen and fringe as on the fore wing, but the fringe tipped here and there with white.

Underside of both wings greyish-brown tinged with violet (especially the hind wing and distal half of fore wing); both wings with slight dark cellspot and diffused, excurved postmedial line; fore wing with a subterminal white dot behind SC^4 ; hind wing with a broadly-diffused, curved subterminal dark shade; fringe of both wings chequered with white at tips.

Manusela, 6,000 feet, October to December, 1919, one ♂.

♀, 38 mm.

I provisionally place here a very worn ♀ from the same place and elevation. Fore wing dark-brown, showing only a few scattered violet scales (at base, on postmedial line and especially on subterminal line); orbicular black spot standing out strongly; lines almost lost, the subterminal being best defined; terminal triangular dark patch just as in the ♂. Hind wing much paler than in the ♂ (owing to condition?) and without violet irroration. Underside also paler but agreeing with the ♂ in markings. Palpus less thickly hairy than in the ♂ and without hair on the third joint above; otherwise agrees.

Near to (perhaps race of) a form from New Guinea, two unnamed specimens in coll. Brit. Mus.

70. *Hypena ceramensis* sp. nov.

♂, 33 mm.

Antenna ciliate. Palpus nearly as in *H. euphyes*, but the third segment with the scaling less triangular (broader at base and narrower towards tips).

Fore wing pinkish-grey suffused with brown, a diffused band distally to the postmedial line and a subapical patch paler, without brown suffusion; antemedial line reddish-brown, diffused, slightly excurved, from two-sevenths costa to one-fourth hindmargin; orbicular a dark-outlined white spot; reniform indistinct (appears rather narrow, kidney-shaped); postmedial line from four-sevenths costa, slightly bent outward to about R^1 , thence making a very slight inward curve to hindmargin at four-sevenths; broad black subterminal dashes behind SC^4 and SC^5 ; an oblique black streak from apex to behind R^1 , where it joins a horizontal black streak with broad triangular dark shading behind it; a diffused subterminal dark shade on posterior two-thirds of wing, with traces of a pale line on it here and there; a broad dark terminal line; fringe dark-brown with traces of a pale line at base and streaks at the veins.

Hind wing almost uniform grey-brown with a broad dark terminal line and slight dark line at middle of fringe.

Both wings beneath grey-brown; posterior third of fore wing and two-thirds of hind wing paler; both wings with a diffused dark postmedial line. Fore wing with a postmedial white streak from costa and subterminal dentate white marks behind SC^4 and SC^5 ; hind wing with a dark discal spot and slight subterminal dark shade.

Manusela, 6,000 feet, October to December, 1919, one ♂.

Probably near to *H. columbana* Moore, from Ceylon, but quite distinct.

Note.—One Hyphenid, which does not seem to fit in to any known genus, is held over for further study.

HYBLÆINÆ.

71. *Hyblæa subcærulea* sp. nov.

♀, 33 mm.

Head, palpus above and thorax? (almost denuded) very dark purple-brown; abdomen above black-brown slightly ringed with whitish, and laterally striped with black and white; palpus and body beneath whitish; legs white, shaded and irrorated in parts with blackish.

Upperside of both wings nearly as in the typical ♂ of *constellata* Gn. (from Sylhet); fore wing with the termen rather more strongly excurved behind apex than in *constellata* and with the dark markings

somewhat stronger, both ante- and postmedial bands being more strongly bent outward at middle; hind wing with the yellow spots rather less sharply defined than in *constellata*.

Underside of fore wing black-brown with the area behind fold and two very large square spots behind costa bluish-white; some whitish irroration at proximal three-quarters of costa; a large discal patch between the two white patches slightly blacker than the ground-colour. Hind wing blackish, closely irrorated with metallic pale-blue except along the anterior two-thirds of termen and distal third of costa; the blue area interrupted by a long narrow discal patch (extending almost to costa and broadening at middle), an anterior antemedial spot and two rows of smaller spots suggesting medial and postmedial lines.

Manusela, 6,000 feet, October to November, 1919, one ♀.

Seems entirely distinct from anything previously described; probably nearest to *strigulata* Gaede (from W. Java).

SOME NEW GEOMETRIDAE AND DIOPTIDAE IN THE JOICEY COLLECTION.

BY LOUIS B. PROUT, F.E.S.

Family GEOMETRIDAE.

Subfamily OENOCHROMINAE.

1. *Ozola eurycraspis* sp. nov.

♀, 29 mm.

Head and body ochreous. Legs slightly spotted with fuscous.

Fore wing narrow, apex slightly produced, termen gently sinuous, scarcely excised, whitish ochreous with scattered dark dots; costal margin dark from base to antemedian line, which is placed just proximal to one-third, thick anteriorly, bent in cell, then oblique inward and slender; a dark border, considerably broader than that of *atrofasciata* Pagenst, (just entering the cell), containing—as in that species—apical and mid-terminal spots. Hind wing with termen smooth; antemedial line vague, anteriorly obsolete; border broader than in *atrofasciata*, containing a slight pale terminal spot behind R⁵.

Underside similar.

Tenimber.

All the dark markings are more marked with reddish than in *atrofasciata*.

Subfamily HEMITHEINAE.

-- 2. *Hipparchus euryagyia* sp. nov.

♀, 60 mm.

Head green. Palpus mostly light reddish-brown. Antenna white. Thorax and abdomen whitish-green, the patagia and tegulae greener.

Fore wing with apex minutely falcate, termen smooth, very gently concave anteriorly and convex in the middle; green, with costal margin and veins broadly white, as in *albovenaria* Brem.; discocellulars also

white; lines white, even broader than in *albovenaria*; antemedian straight, from one-fourth costa to beyond one-third hindmargin; postmedian at about three-fifths, incurved at costa, otherwise straight; subterminal scarcely less broad than the others, forming an extremely slight inward curve, from costa near to apex to hindmargin at tornus; fringe whitish-green. Hindwing with termen almost smooth, no angle or bend at R^3 ; veins less broadly white than on fore wing; abdominal margin white; postmedian and subterminal lines (bands) continued, the former from mid-costa to threequarters abdominal margin, the latter straight from costa close to apex to tornus.

Underside with hindmargin of fore wing and proximal part of hind wing whiter; the white veins (on fore wing narrower than above) and transverse markings reproduced, the antemedian of fore wing feeble. • Yunnan: Tali. Type in coll. Joicey, ex coll. Brabant (labelled *glauca* Ménétr.).

As in *albovenaria*, the green ground-colour is slightly intensified against the white lines.

---3. *Aporandria specularia* (Guen.) haplograpta subsp. nov.

♀, 60 mm.

Fore wing rather paler green than in *specularia*, without the shadowy lines, unicolorous except for the small red black-mixed cell-dot. Hind wing with the yellow proximal shading scarcely different above, and with the reddish disocellular patch reduced to an elongate mark of about the size of that of *Ornithospila lineata*, pale and inclining to buff distally, with a few blackish scales proximally and slightly swollen at the middle of DC^3 where it contains a small red, black-mixed dot, corresponding to the more conspicuous black dot of the name-type; the shadowy line wanting.

Cochin China: Saigon. Ex coll. Brabant.

Unfortunately the sole example known from the country, perhaps a mere aberration. So far as hitherto observed, *A. specularia* does not vary very much throughout its known range—India, Malay Peninsula, Sumatra, Java, Borneo, Celebes, Sula.

4. *Victoria barlowi* sp. nov.

♂, 38 mm.

Closely similar to the W. African *immunifica* Prout, of which it may prove to be a subspecies. Differing as follows:—

Face and outer side of palpus ochreous, somewhat mixed with red-brown. Crown green, very narrowly white in front. Antennal shaft pale ochreous. Abdomen dorsally green, only with a slight patch of ochreous in the region of the anterior crests (these somewhat damaged, apparently mixed of white, ochreous and red-brown).

Fore wing with costal edge narrowly ochreous, instead of broadly reddish; terminal line and fringe similarly ochreous, but with a slight irroration of dark red-brown. Hind wing with fringe corresponding to that of fore wing.

Zomba Plateau, Nyasaland, November, 1920 (H. Barlow).

The Joicey collection has a couple of typical *immunifica* from Gambia; the originals were from Sierra Leone.

5. *Chlorodrepana aquisecta* sp. nov.

♂, 30 mm. Differs from *rothi* Warr. as follows:—

Fore wing with the pale costal border mottled with green; proximal green area bounded by a stronger dark line, which follows a different course from that of *rothi*, being slightly farther than termen anteriorly than posteriorly, only very bluntly bent outward at R^1 , slightly incurved between the radials, bluntly prominent at R^2 , and scarcely incurved posteriorly; distal area weakly marked, terminal dots almost obsolete. Hind wing with apex and termen more rounded; red costal patch rather brighter; boundary of green area showing corresponding distinctions to these of the fore wing; terminal line more interrupted than in *rothi*.

Both wings beneath less darkened than in *rothi*, the postmedian band of the fore wing parallel with the subterminal, not—as in *rothi*—more oblique.

Bitje, Ja River, Cameroons, May and June, wet season (G. L. Bates).

6. *Prasinocyna triflifimbria* Prout *leucopis* subsp. nov.

♂. 34—37 mm. Face predominantly white, leaving only a small upper part (rather less than one-third) red. Vertex also with the white much extended.

Fore wing with costal edge beneath more reddish.

Nyasaland: Zomba, May, 1920 (H. Barlow). A second, rather defective ♂, labelled "Nyassa (Smith)," has long stood in the Joicey collection.

P. triflifimbria triflifimbria, from West Africa, has, like so many

of the family, a very narrow white lower edge to the face, not noticed in the original description.

Leucaniodes gen. nov.

Face rounded, somewhat prominent, with appressed scales. Tongue wanting. Antenna in ♀ rather short, bipectinate almost to apex. Pectus moderately hairy. Femora nearly glabrous. Hind tibia with all spurs. Tarsi not spinulose. Thorax and abdomen not crested. Frenulum (in ♂ ?) in ♀ wanting, the hind wing with basal expansion.

Fore wing narrow, costa very gently curved near base, then almost straight, apex almost rectangular, termen vertical to R^3 , strongly oblique posteriorly; cell over one-half, DC^3 slightly incurved anteriorly, then strongly oblique; C well free, $SC^{1,2}$ long-stalked, SC^3 approaching but not touching $SC^{3,4}$, stalk of $SC^{3,6}$ from well before end of cell, position of R^3 not extreme, M^1 remote from R^3 . Hind wing long and narrow, apex pronounced, termen straightish anteriorly, becoming gently curved posteriorly, tornus rounded; cell almost one-half, DC^3 oblique; C anastomosing with SC to near end of cell, SC^3 stalked, R^3 from slightly before middle of DC, M^1 remote from R^3 .

Type of the genus: *Leucaniodes periconia*, sp. nov.

A very distinct genus. Only two Hemitheine genera hitherto known (*Alloeopage* and *Cacochloris*) have SC^3 arising from SC^1 —probably by obsolescence of its base. *Alloeopage* belongs to my Group iv, with well-developed frenulum; from *Cacochloris* the new genus—even if the ♂ frenulum prove wanting—differs totally in palpus, in shape, in anastomosis of C with SC on hind wing, and other characters. I suspect it may have originated from the *Omphax* group.

7. *Leucaniodes periconia* sp. nov.

♀, 34 mm.

Head and body concolorous with wings.

Fore wing whitish, cleanest on the veins and a longitudinal streak in front of M from base to end of cell, otherwise tinged with smoky brown; a brighter brown shade behind M from base to origin of M^2 ; no definite markings, but the wing nearly covered with fine longitudinal lines of grey-brown irroration, giving the effect of alternate ridges and furrows, much as in many of the *Leucania* group, *Chilo* and other species which rest on dry grass or reeds; terminal line suggested, but not distinct; fringe concolorous. Hind wing white.

Underside similar, but with the fore wing slightly darker anteriorly, paler posteriorly, and lacking the white and brown streaks at M.

S. W. Protectorate, South Africa, without more exact locality.

8. *Maxates dysides* sp. nov.

♀, 42 mm.

Palpus long, second joint reaching beyond frons, third joint slender, as long as second.

Similar to *macariata* Walk. Wings rather broader. Fore wing with termen rather less oblique, not excised between the radials; distal boundary of the green area less oblique than termen, rather more deeply incurved between the radials; shadowy (on underside distinct) subterminal band less broad, but continuing (though tapering) to costa. Hind wing with tail rather less long; distal boundary of green area much less produced at M¹, blunter; subterminal band less broad proximally, marked with elongate black (beneath weaker) marks before and behind R².

Lebong Sankei, Benkoelen, S. W. Sumatra.

Leptocolpia gen. nov.

Face smooth. Palpus short. Tongue wanting (?). Antenna in ♂ bipectinate. Pectus hairy. Femora scarcely hairy. Hind tibia of ♂ dilated, with hair pencil; all spurs present, rather short, rather approximated. Abdomen not appreciably crested. Frenulum in ♂ moderately strong, from before basal expansion of hind wing. Fore wing rather narrow, with costa gently arched. Apex acute, termen slightly waved, very slightly subconcave to R³, here sharply angled, posteriorly extremely oblique; cell rather less than one-half, DC deeply incurved very oblique posteriorly, SC¹ anastomosing with C, SC²⁻⁵⁻³⁻⁴ rather long stalked, R¹ about connate, M¹ approximated at base to R³. Hind wing with costa rather long, apex rounded, termen waved, produced to rather strong teeth at R¹ and R³, with a shallow sinus between them, tornus moderate; cell less than half, DC incurved, oblique posteriorly; C very slightly approximated to cell near base, rapidly diverging, SC² well stalked, R² very characteristic, M¹ approximated to R³.

Type of the genus: *Leptocolpia viridicatena* sp. nov.

Differs from *Bathycolpodes* (which it should precede) in the pectinate antenna, narrower wings, separation of M¹ of both wings, &c.

9. *Leptocolpia viridicatena* sp. nov.

♂, 26 mm.

Face black. Palpus black, the basal joint drab. Vertex and front of thorax white. Antennal shaft white, pectinations ochreous. Thorax and abdomen mostly concolorous with wings, patagia mostly green, a slight ochreous (possibly discoloured from green) dorsal patch at base of abdomen. Fore wing deep fleshy (a blend of pink, ochreous and white scales), with olive-grey irroration or strigulation; in front of cell paler, in front of subcostal stalk and SC⁴ mottled with darker gray; cellspot larger than a dot, black-grey; antemedian line faintly suggested in white, curved; postmedian fine, white, excurved anteriorly, then oblique inwards; an irregular subterminal white line rather near the postmedian, from costa to R³ enlarged into interneural spots, between the radials incurved, at R³—M¹ strongly excurved, behind fold slightly oblique inwards; between the postmedian and subterminal, from SC⁴ to hindmargin, a series of green spots, finely divided by veins of the ground-colour; a series of anteterminal white spots, except at R²—M¹, where there is a longitudinal browner area; between the subterminal and anteterminal spots the colour is green from costa to R¹ and irregularly banded with purple-grey between R³ and hindmargin; terminal spots irregular, blackest between M² and SM²; fringe white, with various mottlings. Hind wing to beyond middle with ground-colour as fore wing, becoming green-mixed at end (especially posteriorly) and basewards along abdominal margin; cellspot as on fore wing; a broad white postmedian band, slightly incurved between the radials, then slightly constricted by a small projection of the green shade between R³ and M¹; a narrower, somewhat macular antemarginal band; area between the bands rather densely irrorated with grey; terminal line olive-brownish; fringe as on fore wing. Underside more densely irrorated with darker grey, especially on the dark cellspot and two white outer bands.

Madagascar. Type received through Le Moult.

Very distinct from all known species; in some respects recalls a diminutive, narrow-winged *Archichlora* (*Chloroteras*) *devoluta* Walk.

—10. *Hemidromodes sabulifera* sp. nov.

♀, 20 mm.

Head, body and wings whitish, with sandy irroration, of a slightly brighter tone than that of *Neromia pulvereisparsa* Hmps. but less

copious; the face (except a narrow lower part, which remains white), third joint of palpus and inner side of fore leg much more densely irrorated, looking almost concolorous, a fillet between the antennæ clearer white. Antennal pectinations about two. Hind tibia with terminal spurs only.

Fore wing with two indistinct dark lines, chiefly expressed by dots on the veins and by the absence of irroration on their reverse edges; antemedian at nearly one-third, excurved; postmedian from three-fourths costa to hindmargin near tornus, very gently (scarcely) excurved in the greater part of its course, slightly incurved behind M^2 , noticeably projecting on SM^2 . Hind wing with only the postmedian line, which is rather more proximally placed than on fore wing and is somewhat inbent at both folds, recalling that of *Neromia pulvereisparsa*.

Underside paler, unmarked.

Deesa (Disa), October 1899 (G. G. Nurse).

I think this is quite distinct from both the African species (*robusta* Prout and *affinis* Rothschild). Larger than *affinis*, of a quite different colour (unless this be due to discoloration), the postmedian line of both wings rather more distally placed, the hind wing with abdominal margin relatively slightly longer. Fore wing with both R^1 and M^1 well stalked, hind wing with M^1 rather long-stalked.

Subfamily STERRHINAE.

11. *Anisodes renifera* sp. nov.

♂, 24 mm.

Like *A. renistigma* Prout (Ann. Mag. Nat. Hist. (8) vi. 241), from E. Peru, except as noted. Hind tibia rough-scaled proximally, not throughout. The "rosy purple" markings in part more tinged with black. Face with a line of spots at extreme upper edge (foreshadowed, however, in *renistigma*, though overlooked in original description). Abdomen with a pair of ill-defined subdorsal spots at posterior end of first segment and a weaker mediodorsal one on second; from fourth segment onwards strongly tinged with roseate.

Fore wing rather less broad; slightly paler; costal margin a little greyer; median line more deeply lunulate in posterior half. Hind wing with median line lunulate-dentate instead of straight.

French Guiana: Godebert Maroni, September. Ex coll. Brabant.

♀ . 28 mm. Rather larger, third joint of palpus very long.

"British Guiana." Allotype ex coll. Druce.

The British Museum has a ♀ aberration from La Chorrera, Panama, April 1 to May 15, 1898 (C. H. Dolby Tylor) with the cellspot of hind wing nearly filled with black.

Both this and *renistigma* belong to the *urcearia* group, with M¹ of hind wing closely approximated at its origin to R³.

12. *Ptochophyle definita* sp. nov.

♀ , 25 mm.

Face almost entirely overlaid with red. Palpus very short, ochreous on inner side, red on outer. Vertex ochreous, weakly overlaid with reddish. Antenna ochreous, above strongly reddened proximally. Thorax and abdomen pale ochreous, somewhat irrorated (above strongly suffused) with red. Legs strongly mixed with red, fore leg on inner side almost wholly red.

Fore wing not broad, termen straight and not very oblique from apex to M¹, very oblique from M¹ to tornus; yellowish ochreous with coarse red irroration; a rather broad chocolate costal margin, triangularly expanding a little at origin of median line, gradually narrowing to apex, being bounded by SC¹; antemedian line thick and chocolate coloured in cell, where it is slightly oblique outward, posteriorly slender and red, sinuate inward at fold, oblique outward to hind-margin; median line deeper chocolate, almost blackish, very straight and firm, arising just proximal to the cellmark, somewhat oblique inward to hindmargin proximally to the middle, continued across hind wing, reaching abdominal margin somewhat beyond the middle; cellmark elongate, equally dark; postmedian reddish, arising at about two-thirds, mixed with chocolate anteriorly, slightly angulated outward at R¹, lost at M¹, reappearing more proximally behind M¹ near its base and running irregularly and indistinctly to an oblique darker mark at hind-margin near tornus; a highly sinuous dark chocolate line from five-sixths costa, oblique outward, thickened at R², merged with the terminal between R³ and M¹, reappearing as an irregular tornal triangle with thickened apex and a spot of the ground-colour at its base; terminal line dark chocolate; fringe olive-grey, at base reddish chocolate. Hind wing with termen strongly gibbous, the projection at R³ to M¹ somewhat accentuated by an otherwise scarcely noticeable

sinuosity in front of R^3 ; SC^3 very shortly stalked, M^1 connate; median line followed by an oval white cellspot; postmedian fine, reddish, sinuous, rather strongly outbent in middle; subterminal line not differentiable; terminal line thick and sending out an acute tooth on M^2 ; fringe as on fore wing.

Underside mostly paler, but the fore wing with strong red suffusion in cell; margins red instead of chocolate; markings reproduced but less sharply defined.

Mahatsinjo, near Tananarive, Madagascar.

Very distinct from any species known to me. Has a few points in common with *rubida* Swinh. (Tr. Ent. Soc. Lond. 1904, p. 501) but—apart from many other differences—quite unlike in shape.

13. *Tricentra flavitornata* sp. nov.

♂, 17 mm.

Head and body flesh-colour, paler beneath than above, the vertex and front of thorax suffused with olive-grey. Palpus deep rosy on outer side. Antennal shaft proximally rosy. Fore leg partly rosy.

Fore wing with termen very strongly curved behind middle, so as to become extremely oblique posteriorly (not far short of parallel with costa); pale primrose-yellow with rosy reticulate markings, formed (as in *brunneomarginata* Warr.) by rosy veins and several irregular, strongly waved transverse lines; cloudings of olive-grey at base, along costal region, and in two irregular oblique bands, the first crossing the discocellulars and bifurcating broadly behind, enclosing a clear yellow semicircle at tornus, the second subapical; both cellspots white; the anterior smaller and more obscured than the posterior. Hind wing elongate, the termen being very strongly gibbous; concolorous with fore wing; both cellspots rather large and clear, with fine olive-grey circumscription; no olive-grey clouds at base, costa, nor across DC; a terminal half-band of olive-grey from apex to near R^3 and an irregular tornal patch, the two narrowly connected along termen; minute yellow marks at extreme termen.

Underside paler, with no definite pattern, in places (especially in costal region of fore wing) with pinkish suffusion; the olive-grey markings of the upperside and the white cellspots feebly suggested.

French Guiana: Godebert Maroni, October. Type ex coll. Brabant.

Easily distinguished by the shape and markings.

14. *Problepsis plenorbis* Prout ♂.

This fine species was described (Nov. Zool. xxiv, 309) from a unique ♀ in the Tring Museum. Mr. Joicey has now obtained a good ♂ from Lebong Sandai, Benkoelen, S.W. Sumatra. This enables me to describe the coloration of the head (lost in the type) and to give the ♂ characters, which latter show the affinities to be rather with *appollinaria* Guen. than—as I had suspected—with *conjunctiva* Warr.

Face dirty white, in upper half suffused with dark grey, which is strengthened into a large black spot at each side of upper part; palpus black above, white beneath, with a small intermediate area of brownish, which usurps most of the lower part of the short terminal joint; crown black, very narrowly white in front; antennal shaft and pectinations dark brown (distinctly darker than in *vulgaris* Butl.), the pectinations nearly as long as in *appollinaria*, extending about to the 38th joint; ♂ hind tibia strongly dilated, with hair-pencil, proximal part more strongly fringed than in *appollinaria*, tarsus less extremely abbreviated, measuring about one-third of tibia.

15. *Scopula elwesi* sp. nov.

♂, 27 mm.

Face with slight prominence below middle, appressed scaled; chestnut with some blackish irroration. Palpus with rather long projecting scales, slightly transitional towards those of *Oar*; ochreous, streaked with blackish along outer side. Vertex, collar and antenna ochreous with some black scales. Antennal joints somewhat projecting, with slender fascicules of cilia rather longer than diameter of shaft. Thorax and abdomen above pale, with very heavy black irroration, only the abdominal incisions and anal end freer therefrom; abdomen with a lateral stripe of ochreous, the venter pale, with sparse irroration. Coxae and femora ochreous, with much black admixture on upper and inner sides (the hind leg least so), tibiae and tarsi pale; hind tibia not dilated, with a pair of well-developed terminal spurs; hind tarsus not abbreviated. Wings not very broad. Fore wing whitish cream-buff, sparse black-grey irroration (at base denser); markings tawny ochreous; fore wing with some suffusion in proximal half, especially near base; antemedian and median lines rather straight, the latter enclosing the slightly elongate black celldot; post-median from three-quarters costa to beyond two-thirds hindmargin, very slightly incurved between the radials and dentate outward on R³ and M¹; proximal subterminal thick, nearly

parallel with postmedian, distal wanting; subterminal line fine, not sharp grey, interrupted at the veins; fringe light ochreous. Hind wing with SC² minutely stalked with R¹; colour and markings as on fore wing, but without so much ochreous suffusion proximally and with antemedian line wanting; median shade just beyond celldot. Under-side similarly but less sharply marked.

Bashkars River, just north of Lake Taletskoi, Altai, July 26, 1898 (H. J. Elwes). Type ex coll. Elwes.

Very distinct from any hitherto known species of the *Pylarge* section. There is a bare possibility that *anaitaria* Herz, described from the ♀ and unknown to me, may prove the same, but this is extremely unlikely both from the description and from the locality (Lena-Vilyui District).

16. *Ptychopoda (Xenocentris) trisetata* sp. nov.

♂, 16 mm.

Face blackish-fuscos. Palpus slender, fuscous. Vertex white. Antennal joints triangular, the ciliation rather long (damaged in the type). Collar tinged with ochreous. Thorax, abdomen and legs light bone-colour, the fore leg somewhat darkened on upper and inner sides. Mid-tibia with moderately strong fringe of long hair on upper side. Hind tibia dilated, the femoro-tibial pencil light brown, fringe of upper side and the distal tuft whitish, the latter reaching to near the end of the tarsus, which when freed from its covering is seen to be not greatly shorter than the tibia.

Wings slightly narrower than in *biselata* Hufn. (= *biselata* auct). in colour and markings almost identical with that species, the dark markings rather weak, the celldots minute and sharp. Fore wing with some slight shading proximally but with no clearly differentiated antemedian line; median shade obsolescent anteriorly, fairly broad behind the celldot; postmedian line fine, slightly straighter and slightly more proximal than in *biselata*; distal shades rather uniform, with the pale undulate subterminal broad; no terminal line; fringe narrowly yellowish-tinged proximally, then more greyish. Hind wing with termen appreciably bent—though not angled—at R³; markings corresponding to those of fore wing. Fore wing beneath rather more suffused, hind wing rather whiter, with the subterminal dark shades somewhat narrowed.

Shinano, Japan, the type label "2. 11. '15," probably a clerical error for 2. ix. 15, the date assigned to the paratype. Also a short

series in coll. Tring Mus. merely labelled "Japan." Probably not uncommon but overlooked on account of its close superficial resemblance to minute *biselata* or *invalida*. The only hitherto known Japanese species of the section *Xenocentris* is *effuaria* Christ.

Subfamily LARENTINAE.

17. *Coenotephria acme* sp. nov.

♂, 27 mm.

Head and body brown-grey, mottled with white and with some dark irroration; metathoracic tuft mostly white. Palpus scarcely $1\frac{1}{2}$; beneath mostly whitish. Antenna somewhat thickened proximally, closely lamellate, pubescent. Legs mostly darkened, extremities of joints white.

Fore wing rather elongate, costa arched posteriorly, apex moderately sharp, termen slightly curved, oblique; R^1 connate or just separate; glossy; basal patch and median band black-brown with a slight vinous admixture, margined by white lines; the subbasal white line excurved in middle, slightly indented at SM^2 ; succeeding area white, transversed by three irregular, incomplete, in places confluent lines which arise from two black-brown costal spots, the first line remaining black-brown, the other two mostly vinous, with slight dark irroration; antemedian line at about one-third with a small proximal projection at M and strongly oblique inward from fold to SM^3 ; celldot moderately large, black, surrounded or followed distally by some pale scaling; postmedian at or beyond two-thirds (median area variable in breadth), very acutely produced on R^3 , strongly incurved or inbent behind, the band consequently much constricted behind M^2 ; area beyond postmedian white, transversed by two lines analogous to those preceding the antemedian, but with the distal the darker; distal area mostly dark-coloured, especially proximally to the subterminal, which is slender, slightly interrupted, cut by a conspicuous oblique white posteriorly dark-edged streak from apex; dark interneural spots between subterminal and termen, terminal line broken into short dashes; fringe weakly chequered, and with a whitish line at base. Hind wing elongate costally, termen slightly vinous; pale, with a fleshy or vinous tinge, the markings of underside feebly indicated. Fore wing beneath more suffusedly marked than above. Hind wing beneath rather strongly marked; proximal half with some dark shading and some wavy lines; a black celldot; a broad

and strong postmedian line, incurved at R^2 , lobed outward at R^3 ; a whitish band beyond; terminal area darkened, bearing a darker but ill-defined subterminal band.

Madagascar: Tananarive, type and paratype ♂ (ex coll. Brabant). A third example merely labelled Madagascar.

Subfamily GEOMETRINAE.

18. *Nothabraxes barlowi* sp. nov.

♀, 61 mm.

Head mostly black, the palpus beneath (and perhaps the face, which is somewhat damaged) with some ochreous hair. Thorax mottled, black and creamy white. Abdomen robust, orange with black spots and broken belts, much as in *commaculata* Warr.; ovipositor long. Legs predominantly black, the hind tibia in its proximal part pale ochreous and with the spurs partly of the same colour.

Fore wing black, with three large cream-white patches, which contain some irregularly (and somewhat asymmetrically) placed black spots or large dots; a basal patch about as in *commaculata* Warr. (about 9 mm. long in middle, irregularly rounded distally); a costal patch about 6 mm. long anteriorly, irregularly narrowing and ending in a black point at M, containing the elongate cellmark, its other black spots mainly costal; a narrow patch midway between end of cell and termen, commencing at R^3 and ending just behind fold. Hind wing light orange-ochreous, its proximal hair darker; small irregular and asymmetrical black spots beyond middle, chiefly at costa and on tornal one-fifth of wing; a narrow black border, commencing at apex and tapering to a point behind R^3 , but with a slight proximal projection at the radial fold; one or two small spots of the ground-colour in this border; fringe anteriorly black, then chequered (at tornus predominantly ochreous). Underside similar, but with the patches on the fore wing more ochreous.

Nyasaland: Chikala, near Lake Shelwa, February, 1920 (H. Barlow).

Apart from its larger size and orange hind wing, this species differs markedly from *commaculata* in the black apical region of both wings.

19. *Pitthea hypomima* sp. nov.

♂, 42 mm.

Face white, the overhanging hair above and at sides black. Palpus black, narrowly whitish beneath. Vertex and antenna black. Thorax

above black, beneath mixed with yellow. Legs grey, the coxae and femora beneath white. Abdomen black-grey, with two rows of lateral white spots and with the venter yellow.

Fore wing black with two yellow bands placed nearly as in *continua* Walk., but of a deeper, more golden hue; first band moderately broad, with distal indentations on M and SM², not reaching costa, in front of SC (which remains narrowly black) only represented by a narrow wedge, with long-produced baseward point, succeeded by interrupted yellow scaling almost to base; outer band very small, anteriorly not reaching SC⁵, posteriorly tapering to a point at R³, but succeeded by a large dot behind R³. Hind wing black, in abdominal region more olive-brownish; a rather broad band much as in *continua*, but not followed by orange spot at termen; no orange spot at apex.

Fore wing beneath with the yellow bands a little lighter and more extended distally, then much broader, the outer continuous from SC⁵ to M² near termen; proximal band almost reaching costa and with a large extension to the base, leaving black the costal edge, the area behind the cell, and some slight marks at the base of C and in cell behind proximal part of SC; a white spot at base of subcostals and three subapical white spots, the middle one (between SC⁵ and R¹) the longest. Hind wing beneath predominantly yellow, looking more olivaceous where the black parts of the fore wing show through; a black spot between the medians at their origin; some irroration before fold and a streak behind; distal border black, at costa and behind M¹ broadly, in middle very narrowly; three white subapical spots and a fourth (equally subterminally) between the medians.

Cameroons: Bitje, Ja River, 2,000 feet, wet season, April to May, 1912 (G. L. Bates).

The underside is totally different from that of the *continua* Walk. group, rather recalling that of *cunaxa* Druce.

20. *Callioratis abraxas* (Feld.) *grandis* subsp. nov.

♀, 84 mm.

Apart from its much larger size, differs from *a. abraxas* Feld. ♀ (Reise Novara, tab. c. fig. 18) in having the terminal black spots of the hind wing larger anteriorly than posteriorly, whereas in the Natal race they become smaller anteriorly, or the apical one may be entirely wanting. Other differences appear inconstant.

Mlanje, Nyasaland. Type and paratype in coll. Joicey.

21. *Melinoëssa (Hyphenophora) aemonia* (Swinh.) *restrictiflava* subsp. nov.

Before describing this race it is necessary to amend Swinhoe's description of the name-type (Trans. Ent. Soc. Lond. 1904, p. 498). At the commencement the word "face" has dropped out, and it is not noticed that the central band has a mixture (sometimes fairly strong) of bright ferruginous scales. The "distorted band" is pale yellow, not white. The "dark suffusion" distally to this is an ill-defined brown band, occupying on the hind wing the proximal half of the area between this and the subterminal line; the latter consists on both wings of a series of dark intraneural dots, connected on the hind wing by an ill-defined brown line.

M. aemonia restrictiflava has the central band of the face often almost entirely ferruginous; yellow marking of the fore wing narrower, only present between M^2 and SM^2 (without the anterior "dots towards the apex" and without spots in cellule 3 and at abdominal margin), rather more distally placed and slightly less oblique; that of the hind wing narrower and shorter, only developed from costal margin to radial fold; the brown band beyond it a little lighter or brighter; subterminal dots with more noticeable glossy band proximally.

In addition the fore wing may be slightly less acute at apex and the hind wing has a less marked tooth at the extremity of SC^2 .

Cameroons: Bitje, Ja River.

A series including the type, also in other collections. The same race reaches from Gold Coast to Belgian Congo.

In the restriction of the yellow band this subspecies superficially recalls *palumbata* Warr. (Nov. Zool. i, 402, Ivory Coast to Nigeria), which has the brown band narrower, adjoining the subterminal leaden spots, which are differently developed, &c.

22. *Pycnostega (?) leucochora* sp. nov.

♂, 32 mm.

Face and palpus blackish. Head and body inclining to black; some scattered whitish scales. Hind tibia dilated, with a groove containing the hair-pencil.

Fore wing without fovea; proximally, costally and distally dull chocolate-brown, varied with darker and lighter scales and with a sparse sprinkling of metallic bluish-silvery ones; a broad creamy-white median area, with scattered shining-white scales; the proximal boundary of

this area arises at hindmargin before one-third, is very oblique and slightly sinuous to anterior extremity of cell, where it touches (without absorbing) the dark celldot; the anterior boundary runs from this point to the base of SC⁵; the distal from this point to hind margin at about three-fourths, bluntly angulated outwards in middle and slightly excurved at hind margin; terminal line complete, strongly thickened midway between the veins. Hind wing with the white median area considerably broader and reaching costal margin, the dark basal area small, the distal area narrower than on fore wing, with corresponding angle and curve in middle and at hind margin; this area somewhat more mottled, with a suggestion of round dark interneural spots and of pale lunules edging proximally the terminal lines.

Underside similar, but with no metallic scaling; a small additional white patch at base of fore wing.

French Gaboon.

By the scaling and general conditions (palpus, venation, &c.) this seems referable provisionally to *Pycnostega*, in spite of absence of fovea; the antennal pectinations, though strong and close, are less extreme than in the type species (*obscura* Warr., Nov. Zool. xii, 394).

23. *Pycnostega* (?) *stilbia* sp. nov.

♀, 30 mm.

Antenna bipectinate with very short branches. Palpus blackish. Face, vertex and upperside of body blackish, sprinkled with metallic light-blue scales. Underside of body browner, with less metallic scaling.

Fore wing considerably broader than in typical *Pycnostega* (more *Zamarada*-shaped); ground colour nearly as in the preceding species, but clouded nearly throughout with blackish, thus appearing considerably darker; the metallic blue scales rather more copious; median band narrow, tapering at costa, otherwise nearly uniform in width (circ. 2.5 mm.), slightly outbent in middle, very pale yellow with copious metallic whitish scales and traversed in middle by a thick, sinuous golden line; distal area with crenulate pale (metallic-scaled) lines, the two outer nearly meeting between the veins; terminal line as in the preceding species. Hind wing similar, the median band continued, not tapering costally, its golden line less strongly sinuous, distal area with three pale lines, the two proximal meeting on the veins, the third distal between the veins.

Underside without metallic scaling, the median band yellower, the

central line only suggested by some ill-defined scaling of a rather deeper shade.

Cameroons : Bitje, Ja River, October, wet season (G. L. Bates).

Curiously similar to *Peratophyga trigonata* Walk. (from Borneo), except for the lack of luteous vertex, front of thorax and base of costa ; Walker does not notice the golden central line of the luteous band, but it is present in his species.

Family DIOPTIDAE.

24. *Phanoptis miltorrhabda* sp. nov.

♂, 40 mm.

Head and body black, with a tinge of brown.

Fore wing moderately elongate, but rather fuller in the anal region than in typical *Phanoptis* ; black, proximally and posteriorly with a tinge of brown ; a very oblique red band of about 2 mm. width from middle of C, crossing the base of SC¹ and the whole of DC⁴ and terminating just beyond M² near termen ; SC, SC¹ and M² somewhat blackened on the band, which moreover is slightly indented with black distally at the other veins ; a slightly curved row of three small slightly hyaline whitish spots between SC⁵ and R³, the last the smallest and weakest. Hind wing black with a tinge of brown.

Underside similar, the fore wing paler at hindmargin, the red band a little broader and paler.

Peru : Chanchamayo.

Referable to *Phanoptis* by my "Key" (Nov. Zool. xxv, 396) and by no means unsuitable there in spite of the more opaque scaling and slightly less elongate wings, with the cells less narrowed at their extremities. Evidently drawn off by mimetic association with the butterflies *Actinote erinome* Feld. and *Eresia castilla* Feld.

25. *Myonia euryzona* sp. nov.

♂, 32 mm.

Structure and general coloration of head and body as in *leechi* Prout ; abdomen above much less vividly shot with blue.

Fore wing shaped as in *leechi*, or slightly more elongate still ; proximal area black, with the principal veins slightly dusted with capucine yellow ; a capucine yellow central band, 4 or 5 mm. wide,

from C just proximal to the middle to SM² close to tornus; distal area black.

Hind wing black, shot—except at margin—with blue, rather less vivid than in *leechi*; a narrow whitish costal streak, becoming capucine yellow and broadening into an apical spot which reaches R¹ but leaves SC² dark.

Fore wing beneath with a whitish longitudinal streak in cell, some orange scaling anteriorly thereto; the yellow band slightly broadened in middle, its margins being more convex. Hind wing beneath not shot with blue, but with a whitish streak (broadening distally) behind M and the proximal part of R³ and a shorter and slighter one posteriorly; costal and hind area nearly as above, the apical spot without dark dusting.

E. Bolivia: S. Julian, Chiquitos, 400 miles, May (J. Steinbach).

NEW FORMS OF ZYGAENIDAE FROM SUMATRA, CERAM, AND NEW GUINEA.

BY J. J. JOICEY AND G. TALBOT.

THE SPECIMENS WERE COLLECTED BY MESSRS. C., F., AND J. PRATT.

1. *Aglaope hemileuca* Roths. *ceramensis* subsp. nov. and *ab. fumosa* nov.

It is interesting to note that the first of this genus to be discovered in Ceram should be a New Guinea species.

♂ ♀. Fore wing with the indistinct dark subbasal band placed more proximal than in the type form. Vein 7 is given off much nearer the angle of the cell in every specimen, whilst the position of this vein in a series from New Guinea is likewise stable.

Ab. fumosa. Both wings smoky-black, the subbasal line of fore wing distinct. Vein 6 of fore wing arises from angle of cell. One ♂, 3,000 feet, December.

Central Ceram: Manusela, 6,000 feet, October to November, 6 ♂♂, 1 ♀; 4,600 feet, January, 1 ♂; 3,000 feet, January to February, 1 ♀.

2. *Psaphis rothschildi* sp. nov.

Distinct from any known form. Perhaps allied to *euschemoides* Moore, but differing in the smaller discal spots, the differently placed lower white distal spots, and in the small discal spots of the hind wing.

♂ ♀. Upperside with black ground colour. Fore wing with pale yellow basal spots. Three small coral red discal spots, one in the cell below middle, one more distal below the cell, the other below it in 1b, and directed distad. A small white discoidal mark. A subapical series of five large white spots placed close together in 3, 4, 5, 6, and 9, the one in 5 larger than the others, the lower two more distal. Three small white subterminal spots in 2 to 1b, the first the smaller, the second directed distad, the lower nearer the margin. Ground-colour irrorated with deep purple-brown, especially over the basal fourth and along the veins. Veins striped with dark-green. Hind wing with

base and inner margin to the second submedian pale-yellow, merging into orange-red or flame-scarlet (ii), which also colours the other spots. A long stripe in 1c, not reaching margin; a short stripe below the cell; a similar stripe in lower half of cell, reaching beyond vein 2, and a longer stripe next it in upper part of cell.

All these stripes separated distally by the ground-colour, and merged together proximally in the yellow basal colouring. Three discal spots in 2-4, the middle one projecting below the others, the distal one the smaller. Two small submarginal spots in cellule 2. Costa edged with pale-yellow at base for a short length. Anal angle tinged with orange-red. Veins edged with deep violet.

Underside markings similar to upperside. Fore wing with basal stripes on costa and on first submedian. Discal markings flame-scarlet; an oblong spot in middle of cell, a long stripe below cell, not reaching vein 2, an elongate spot in middle of 1b. Other markings as above. Veins heavily bordered with cerulean-blue except at apex. Hind wing with markings as above but a long stripe in 1b, separated from the one in 1a and 1c, and nearer the inner stripe, interspaces shot with violet-blue. A small spot in 6 near the cell. Veins striped with violet-blue.

Head and antennæ black, frons and palpi pale-yellow, collar and patagia pale-yellow. Abdomen pale-yellow ringed with deep-violet. Legs fuscous, striped with deep-violet on the outside and with pale-yellow on the inside except tarsi, which are fuscous mixed with pale-yellow.

Length of fore wing: 26 mm.

S.W. Sumatra: Mount Korintji, 7,300 feet, August to September, three ♂♂, one ♀.

3. *Eusphalera janthina* sp. nov.

Distinct from any other form, and bearing a close resemblance to the Geometrid *Milonia dispar* Prout, found in the same locality.

♀. Upperside of fore wing orange-yellow to orange with a broad black apical area. The orange area reaches beyond cell; outer edge clearly defined, reaching the narrow black costal edge beyond the middle and the outer margin at end of lower submedian, lower part curved distad. An ill-defined black patch on inner margin before the tornus, reaching upper submedian. A series of five small apical dark metallic blue spots, arranged as in other species of the genus. Hind wing with fuscous-black ground-colour. Basal area to base of vein 3

metallic dark bluish-violet (x). Costal area yellow-orange to vein 6, thence merged into a narrow discal orange band reaching the anal angle. Apex and a narrow marginal edge black to vein 3.

Underside as above. Hind wing with the violet area reaching the costa and separated from the orange distal band by a narrower black interspace than on the upperside.

Head and antennæ black, vertex and thorax metallic blue. Abdomen black with a violet tinge, and marked with metallic blue at the joints. Pectus blue; legs fuscous striped with blue.

Length of fore wing: 20 mm.

Central Ceram: Manusela, 3,000 feet, January to February, 1920, two ♀ ♀.

4. *Eusphalera aurantidiscus* sp. nov.

♀. Upperside with black ground-colour. Fore wing with a transverse band, deep chrome (iii) tinged with orange-red anteriorly. This band is broad on the costa, outer edge slightly incurved to vein 4, outwards to 2 and inwards to distal margin; inner edge curved sharply distad below vein 2; the outer edge passes through the cell near the end and cuts veins 2 and 3, the inner edge passes through middle of cell and cuts vein 2 and the submedian. Five small subapical spots of greenish-blue, formed by loosely placed scales. Hind wing ochraceous-orange (xv), with black basal area to middle of cell and scattered black scaling on part of the orange area; outer edge of orange area curved outwards at the middle. A distal margin of ground-colour, broader anteriorly and narrowing to the middle of 1b, where it ends in a point.

Underside with black ground-colour. Fore wing with band as above, but paler. Subapical blue spots larger than above and slightly pointed proximally. Base of costa with some greenish-blue scales. Hind wing with ochraceous-orange discal area smaller than above, not reaching upper edge of cell, inner edge not well defined, touching base of 2 and extending to middle of inner margin; outer edge sharply defined, curved outwards and only slightly invading base of cellule 4, slightly angled below vein 2; this band curved slightly basad at its anterior end. A submarginal narrow greenish-blue stripe from the apex to vein 2, bent at vein 5, thicker above this vein.

Head black, vertex metallic-blue, collar scaled with metallic greenish-blue. Thorax and basal two segments of abdomen black. Antennæ with shaft black, branches chestnut. Legs black, scaled with metallic

greenish-blue. Abdomen pale yellow except the base; ventral surface fuscous-black, apices of segments edged with yellow.

Length of fore wing: 20 mm.

Dutch New Guinea: Nomnagihé, 2,000 feet, January to February, one ♀.

5. *Eusphalera milionoides* sp. nov.

Allied to *satisbonensis* Jord., from Goodenough Island, the ♀ ♀ of both presenting a strong likeness to some forms of the Geometrid genus *Milionia*.

♂. Upperside with the markings similar to the allied form. The fore wing with yellow bands less oblique, broader posteriorly and ending on the inner margin before the tornus. A yellow spot on costa at base. Hind wing with yellow area reaching costa, outer edge straight from vein 4 to costa. Black distal margin narrowing to anal angle. Some black dusting at base of wing.

Underside as above. Hind wing with yellow area somewhat rectilinear and not reaching costa.

Head, thorax, and abdomen black. Antennae with shaft black, branches chestnut. Legs brown scaled with yellowish. Abdomen pale yellow on ventral surface.

♀. Similar to the ♀ of *satisbonensis*. Upperside of fore wing with a broader orange-red band. Hind wing with a narrower yellow band, the edges of which are irregular.

Underside of fore wing with traces of bluish subapical spots. Hind wing as above. Submarginal blue line unbroken and edging costa to base.

Antennae, head, thorax, abdomen, and legs as in allied form.

Length of fore wing: ♂, 18 mm.; ♀, 23 mm.

Dutch New Guinea: Mount Kunupi, 6,000 feet, November to December, one ♂; Nomnagihé, 2,000 feet, January to February, one ♀.

6. *Eusphalera cadmium* sp. nov.

Distinguished by the cadmium-yellow basal half of fore wing and the similarly coloured hind wing patch.

♀. Upperside with black ground-colour. Fore wing with basal half light cadmium (iv), not reaching end of cell and invading the base of cellule 2, outer edge of this area dusted with black, inner edge oblique from base of costa to middle of inner margin. A faint orange tinge at

base. Hind wing with a large distal patch of light cadmium, its inner edge a little invaded by the ground-colour, from upper edge of cell near middle to inner margin a little above the anal angle; outer edge well rounded and reaching the margin at the first submedian.

Underside with black ground-colour, yellow areas paler. Fore wing with a narrow curved apical band of metallic greenish-blue, close to the margin. Basal yellow as above. Hind wing with yellow area as above. A marginal band of metallic greenish-blue from the costa a third from apex to vein 2, broader in cellules 5 and 6, then suddenly narrowing and ending in a point.

Head, antennæ, thorax, and abdomen black. Legs black, scaled with metallic blue.

Length of fore wing : 21 mm.

Dutch New Guinea: Mount Kunupi, 6,000 feet, November and December, one ♀.

7. *Eusphalera jordani* sp. nov.

A very distinct form, distinguished by the red band on the fore wing and presenting a great resemblance to the Geometrid *Milionia rubrifascia* J. and T., which was found in the same locality.

♂. Upperside with black ground-colour. Fore wing with a discal coral-red (xiii) band, from just below costal edge at the middle, crossing the cell beyond the middle, invading the base of cellule 2, and narrowing to a point above the lower submedian; outer edge nearly straight, inner edge curved distad at the middle, and again below vein 2. Hind wing with basal half metallic cerulean-blue (viii), lighter proximally. The edge of this blue area indented.

Underside with black ground-colour. Fore wing with red band paler and broader, only slightly narrower posteriorly and limited by the lower submedian. Metallic blue basal stripes; a short one in cell and two longer ones in 1b and 1c. A small greenish-blue apical spot near costa. Hind wing with blue basal half as above, filling half the cell, produced along the costa and along vein 2, filling base of cellule 2, and invaded by black at the first submedian, vein 2 cutting off a triangular marginal black spot. A narrow marginal greenish-blue stripe joining the costal stripe and continued to the stripe on vein 2 at its end, broader in cellules 5 and 6, then suddenly narrowing and ending in a point.

Antennæ, head and thorax black. Frons edged with metallic blue above, collar bordered with metallic blue, patagia tipped with metallic

blue. Abdomen dark metallic green. Legs black, scaled with metallic blue.

Length of fore wing : 17 mm.

Dutch New Guinea : Mount Kunupi, 6,000 feet, November to December, one ♂.

8. *Eterusia semiflava* sp. nov.

Allied to *risa* Doubl., but with basal half of both wings yellow in the ♀.

♀. Upperside with proximal half primuline yellow (xvi), distal half black. Yellow area of fore wing sharply defined, ending well before vein 2; in two specimens with some brown basal scaling, leaving a narrow band of yellow. Veins in distal half striped with Brussels brown (iii). Hind wing with yellow area angled outwards at vein 4.

Underside of fore wing with basal yellow half and blue-black distal half. A yellow discoidal spot. Hind wing with distal area greenish-yellow, bearing blue-black spots; one in end of cell and produced apically, its upper edge parallel to costa, a small spot near base of cellule 4, a larger one in 3, and a still larger one in 2, a streak behind vein 2, and a more distal spot in 1c.

Head and antennae black; basal segment of antennae, palpi, and vertex dark metallic blue-green; collar narrowly red, edged with black and dark metallic blue. Thorax dark metallic blue-green, patagia yellow. Abdomen deep blue ringed with yellow-white. Legs fuscous, femora dark metallic blue,

Length of fore wing : 20 mm.

S.W. Sumatra : Mount Korintji, 7,300 feet, August to September, 1921, five ♀♀.

9. *Eterusia picturata* sp. nov.

Distinguished by the brilliant metallic-blue proximal area of the hind wing.

♂. Upperside of fore wing Vandyke-brown (xxviii), crossed by a narrow pale-yellow band from costa before the middle to just before the lower submedian, bent distad at lower edge of cell, and narrowing posteriorly. Hind wing with proximal half metallic cerulean-blue (viii) to upper edge of cell and base of vein 2, slightly invaded by the black-brown colour on the submedian and separated by a black line from a discal broad band of mustard-yellow (xvi). The yellow discal band

extends from vein 8 to 2 with a small spot behind this vein, outer edge deeply indented in cellule 5 and slightly so on veins 2 and 3. Distal area and margin black to the anal angle.

Underside of fore wing with proximal half glossy Nile-blue (xix), bordered by a discal pale-yellow band edged with black on inside. The discal band forms a large spot in the cell and narrows below this to lower submedian. Distal area black with a subapical band of Nile-blue from costa to tornus, outer edge slightly curved, inner edge with a separated spot in upper angle of cell, a projection at vein 2 and at the tornus. Hind wing as on upperside, but the costa and outer edge of discal band narrowly bordered with glossy Nile-blue, projecting slightly on the veins and merging into the basal blue at the anal area. Discal band broader than above, its inner edge straight and but slightly bordered with black.

Antenna black, shaft scaled above with metallic bluish-green, basal segment of same colour. Head black, vertex with metallic bluish-green, frons metallic-green. Collar red, tegulae and patagia dark-green. Abdomen dark metallic-green above, black ringed with fuscous below. Legs bright metallic greenish-blue.

♀. Fore wing dark-green overlaying a ground colour of Vandyke-brown. A pale-yellow discal band as in the ♂, but broader and with a small spot below the lower submedian. Hind wing with paler blue in proximal area and broader yellow band. Discal band with inner edge nearly straight, outer edge curved and only indented in cellule 5.

Underside as in ♂ but with broader yellow bands and distal blue areas.

Length of fore wing : ♂ ♀, 24 mm.

Central Ceram : Manusela, 6,000 feet, October to December, one ♂, five ♀.

10. *Pidorus chalybeatus* sp. nov.

The first representative of this genus from New Guinea.

♂. Upperside of fore wing black crossed by a narrow and sharply defined white band from costa at base of vein 11 to inner margin before the tornus, passing through the end of cell and curved slightly outwards between cell and submedian. Hind wing steely-blue, the shade of dark Iyrian-blue (xxxiv).

Underside with fuscous-black ground-colour. Fore wing with a broader white band having a narrower central part as above, the additional more thinly scaled area mostly in the cell and on the distal

edge of the central band. Basal area to inner edge of band dark Iyrian-blue. Hind wing dark Iyrian-blue with a distal margin of ground-colour, broader at the apex and narrowing to the anal angle.

Head, thorax, and abdomen black. Antennæ black; collar red; palpi black; legs fuscous-black thinly scaled with metallic blue; abdomen with some metallic blue scaling on the ventral surface.

Venation of fore wing with 4 and 5 arising from the same point, 6 from a little beyond base of 8.

Length of fore wing: 19 mm.

Dutch New Guinea: Mount Kunupi, 6,000 feet, November to January, three ♂ ♂.

11. *Clematoessa virgata* sp. nov.

The second known species in this genus. Distinguished by the yellow apical patch and basal stripe on the fore wing.

This genus is described by Jordan in Nov. Zool. xxii, p. 297, 1915, from a single female. We are able to describe another species including the ♂. The ♂ antenna has very long branches.

♂. Upperside with ground-colour fuscous-black, markings light cadmium to apricot yellow (iv). Fore wing with a small apical spot rounded on the outside, indented on vein 9 on the inside. A large cell stripe not reaching end of cell, narrow at base and broadening to beyond upper edge of cell, then becoming narrower and rounded at the end. Hind wing with a large discal patch filling outer third of cell to within about 2 mm. of the margin at veins 4 and 5, outer edge nearer the cell above 5, not reaching 8, and limited by vein 2; inner edge incurved in the cell, angled before the base of 2.

Underside as above. Cell stripe of fore wing produced towards lower angle of cell.

Antenna with long branches, longer than in most genera, fuscous-black. Head, thorax, and abdomen fuscous-black. Frons projecting, well rounded. Collar yellow. Patagia fuscous-black mixed with metallic green. Legs fuscous, striped with metallic blue. Abdomen yellowish-white on ventral surface.

♀. Fore wing markings as in the ♂, but larger and deeper in tone. Hind wing with a broad band of orange (iii), covering the distal area between vein 5, and the lower submedian, paler at the anal angle; inner edge irregular, not reaching base of 2, outer edge sharply marked, curved slightly outwards from 5, almost reaching 7; anterior part of band curved proximally.

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Underside as above. Hind wing with the yellow marginal spot in 7 produced on the margin to join the band at vein 5.

Head metallic green on the vertex. Abdomen on the ventral surface fuscous, slightly mixed with grey-white. Anal tuft buff. Otherwise as in the ♂.

Length of fore wing: ♂, 21 mm., ♀, 30 mm.

Dutch New Guinea: Nomnagihé, 2,000 feet, January, February, one ♂, two ♀ ♀.

12. *Clematoessa xuthomelas* Jord. *impuncta* subsp. nov.

♀. Differs from *xuthomelas* in the absence of the cellspot in the band of the fore wing. Hind wing with only a slight yellow dusting on the margin between vein 2 and second submedian.

Nomnagihé, 2,000 feet, January to February, one ♀.

NEW GEOMETRIDAE FROM CENTRAL CERAM.

COLLECTED BY C., F., AND J. PRATT.

BY LOUIS B. PROUT, F.E.S.

OENOCHROMINAE.

1. *Ozola ramifascia* sp. nov. σ φ . 42—46 mm.

Head, collar, patagia, tegulae and part of pectus orange, the face with a transverse dark band below middle, the palpus dark-mixed on outer side. Thorax, abdomen and legs dark-drab to blackish, the venter paler, with some ochreous, somewhat mixed with orange.

Fore wing narrow, but not falcate, termen smooth, blackish; the costal edge as far as the band dotted, or minutely strigulated, with white; an oblique white band from costa somewhat beyond middle to hind margin close to tornus, its anterior end 2—3 mm. wide, its posterior 3—5 mm. (usually broad), its proximal edge straightish, its distal usually with minute irregular teeth and a rather stronger one at (behind) R^2 ; a small tapering branch from its proximal edge at M^2 to SM^2 ; a small, usually less pure white patch on hindmargin just proximal to (generally confluent with) this branch; a terminal line of the ground-colour; fringe almost concolorous. Hind wing with the band narrower at costa, broadening rapidly, branching at or before M^2 , but with its proximal branch the broader, reaching the abdominal margin a little beyond the middle, its distal branch variable, rarely reaching hindmargin, occasionally rudimentary.

Underside the same.

Central Ceram: Manusela, 6,000 feet, October to December, 1919, sixty-eight σ σ , forty-nine φ φ , including the holotype σ and allotype φ ; 3,000 feet, January to February, 1920, one σ , two φ φ ; 4,000 feet, one σ .

Probably nearest to *albimacula* Warr., from Obi, but very distinct, curiously recalling the totally unrelated *Hyposidra albifurcata* Warr. (Nov. Zool. iv, 119), from the Philippines.

2. *Pingasa porphyrochrostes* sp. nov.

♂. 48—50 mm.; 53—56 mm.

Face ochreous-brown, above very slightly darker and more reddish than below, but without any indication of the blackish transverse band of *lariaria*. Palpus nearly as in *lariaria*, in the ♀ with the third joint rather larger. Head and body whitish, the collar and forecoxa tinged with brown, the abdominal crests mixed with brown on their sides. Legs largely brownish or infuscated.

Fore wing shaped as in *lariaria* or with termen very slightly less oblique; coloration nearly as in *lariaria*, but with the irroration less coarse, particularly in the proximal and median areas, where they appear more whitish; antemedian line nearly as in *lariaria*; cellmark rather smaller and less angular, in the ♀ usually quite weak; postmedian with corresponding distinctions.

Fore wing beneath in the ♂ very strongly, in the ♀ very faintly suffused with orange (posteriorly more pinkish), from base to cellmark, which is here stronger than above; a very broad distal border, shaped as in *lariaria* or slightly more sinuous-edged proximally, but very strongly suffused with purple in the ♂, and with slight purple reflections in the ♀. Hind wing in the ♂ with well-developed black cellspot, in the ♀ with slight or moderate indications of the same, occasionally fairly strong where the discocellulars meet the cellfold; ♂ with proximal orange shade as in *lariaria*, ♀ with only very feeble suffusions to distinguish it from that of *chlora*; distal border in ♂ as purple as that of fore wing, in ♀ sometimes almost without purple reflections.

Manusela, 6,000 feet, October to December, 1919, 3 ♂♂, 7 ♀♀.

The ♀ might easily be passed over for slightly aberrant *chlora* except for the lack of black frontal band, but the ♂ underside is totally different. I suspect it may be a race of *manilensis* Prout (Nov. Zool. xxiii, 193) provisionally described (overlooking the coloration of the face) as a race of *lariaria*. The large size, less irrorate upperside and distinctively coloured underside, however, prevent my definitely associating *porphyrochrostes* with *manilensis* at present. The colouring of the upperside readily distinguishes the ♀ from another similar species, *subpurpurea* Warr.

3. *Tanaorhinus unipuncta* Warr. *zoomesta* subsp. nov.

♂ not essentially different from those (rather rare) aberrations of *unipuncta unipuncta* in which the median area is narrowed, the post-median line not very strongly outbent distally to cell, in the submedian area approaching (not infrequently meeting) the antemedian. Beneath quite similarly coloured to *unipuncta unipuncta* ♂.

♀ on an average smaller than that of *unipuncta unipuncta*. Deep green, the fore wing scarcely darker than that of the ♂ (excepting the brown-speckled part of the median area), thus strikingly different from the purple-mixed ♀ of the name-type, the dark cellmark nearly as conspicuous as in the ♂.

Central Ceram: Manusela, 6,000 feet, October to December, 1919, thirteen ♂♂, twenty-three ♀♀, including the type ♂ and allotype ♀; also one ♂ taken at 4,600 feet, in January, 1920, and one ♀ 3,000 feet in February, 1920.

The comparative lack of sexual dimorphism makes this race suggest, at first glance, the Indo-Malayan representative *rafflesii* Moore rather than *unipuncta*; but the sinuous and strongly dentate line of the hind wing, accompanied proximally by a well-marked blackish spot, the brightly coloured underside (on the fore wing not, as in *rafflesii*, largely light green) and other characters show unmistakably its real relationship.

4. *Anisozygia subvenusta* Warr. *diargema* subsp. nov.

♂. 36 mm.

Much larger than *subvenusta subvenusta* Warr., from New Guinea.

Fore wing rather more vivid green, with the white markings purer and more extended, only the white spot in the end of the cell reduced, beneath with the dark posterior end of the subterminal line thickened. Hind wing also with the white markings extended, especially in abdominal area; no subapical dark spot; beneath with the subapical dark spot much reduced, on the other hand with traces of continuation recalling the subterminal band of *sublitturata*, though very much less strong.

Central Ceram, 4,600 feet, January, 1920.

May probably prove a separate species, but the unique specimen is not in perfectly fresh condition.

5. *Spaniocentra stictoschema* sp. nov.

♂. 37 mm.

Face dull red. Palpus reddish above, dirty white beneath. Vertex white. Occiput narrowly red. Antennal shaft white proximally, reddish distally; pectinations ochreous. Thorax above green, beneath white. Abdomen above red-brown, mixed with white towards extremity, the paired white subdorsal spots of the third and fourth segments well separated by the ground colour at the suture and slightly edged with ochre-yellow on their proximal and posterior sides; beneath white; anal tufts well developed. Legs whitish; hind tibia strongly dilated, the spurs rudimentary.

Fore wing with termen strongly angled at R^3 —shape more extreme than in *undiferata* Walk., but not quite as in *gibbosa* Prout ♂; DC^2 with the inward angle rectangular (about as in *gibbosa*); bright green; costal edge snow-white, ending in small subterminal spots and continued finely in reddish to apex; antemedian and postmedian lines comparatively well developed, especially as red-brown spots or teeth on the veins; antemedian from one-fourth costa to near middle of hindmargin weak between M^2 and SM^2 ; celldot large, not mixed with black; another, rather less large, dot anteriorly thereto (on DC^2); postmedian line dentate, oblique outwards from two-thirds costa to R^1 , then parallel with termen to M^1 ; tornal blotch represented by two purplish-centred spots, a round-oval one between the medians and a crescentic one at tornus; terminal line fine, reddish, with small purple-mixed triangular extensions on the veins; fringe light ochreous-brown, dark-spotted at the veins. Hind wing rather narrow and elongate, the tooth at R^3 pronounced; abdominal flap white, somewhat expanded, long-fringed; the rest as on fore wing but without antemedian line. Underside whitish-green, unmarked except for the subterminal spots of fore wing, which are grey; fringes as above.

♀ rather larger, broader-winged, the fore wing very little bent at R^3 , the red-brown markings lighter and brighter, those at tornus of fore-wing and apex of hind wing considerably extended; hind tibia with all spurs present.

Central Ceram: Manusela, 6,000 feet, x-xii, 19, type ♂ and three ♀♀.

Nearest *gibbosa* Prout, cellspots larger, red, markings stronger, red-mixed, white costa not underlined with red except at extreme base, tornal blotch subobsolete above as well as beneath, ♀ much less eccentric in shape.

6. *Thalassodes retusa* sp. nov.

♂ ♀. 43—45 mm.

Face green. Palpus in ♂ $1\frac{1}{2}$, with third joint fully half as long as second; in ♀ nearly 2, with third joint nearly as long as second; green, white beneath. Vertex white; occiput green. Antennal shaft white proximally, then pale green. Thorax above deep green, beneath greenish-white. Abdomen white, broadly green dorsally on first few segments, the green then narrowing, scarcely tinging the last segments. Legs predominantly white, the fore and middle legs tinged with reddish-ochreous on inner side; fore tibia thickened, the tufts of hair on underside in the ♂ stronger than in the allies; hind tibia not dilated, the spurs not shortened.

Fore wing with R^2 well forward, DC^3 markedly incurved, M^1 connate; blue-green (rather darker than in *veraria* Guen., *falsaria* Prout, &c.), with very fine white strigulation; costal edge whitish-buff; lines white fine, obsolete costally, otherwise moderately distinct; antemedian oblique, about as in the allies; postmedian nearly straight, slightly less nearly parallel with termen than in most of the group, reaching hindmargin at two-thirds; fringe cream-buff, tinged with greenish proximally. Hind wing with termen only very weakly bent at R^3 ; the white discal mark extremely slender to subobsolete; postmedian rather firm though fine, nearly straight to the usual bend at M^1 , then straightish or waved to abdominal margin; fringe as on fore wing.

Underside pale-green with DC^2-3 slightly whiter; costal margin of fore wing and fringes cream-colour.

Central Ceram: Manusela, 6,000 feet, October to December, 1919, one ♂, three ♀.

Easily distinguished from *falsaria* Prout by its larger size, deeper colour, much more bluntly bent hind wing, besides other slighter differences. The only member of the group in which the hind wing is quite so obtusely angled, is the red-faced *clarifimbria* Prout from Ceylon.

7. *Thalassodes hypocrites* Prout *vidua* subsp. nov.

♂ ♀.

Hind wing slightly broader than in *hypocrites hypocrites* (Assam to Singapore), the angle at R^3 not sharp. Ground-colour brighter green, rather more opaque, but appearing less smooth, the white irroration and strigulation being rather more developed. Termen without black

dots at veins, the white spots of the fringe encroaching minutely on to the wing.

Central Ceram : Manusela, 6,000 feet, October to December, 1919, ♂ type, ♀ allotype and two ♀ ♀ paratypes.

8. *Prasinocyma punctulata leucogramma* subsp. nov.

♂ ♀ . 32—41 mm.

On an average somewhat larger, and of a brighter bluish-green than *punctulata punctulata* Warr. (Nov. Zool. x, 357, New Guinea), but only differing constantly in the presence of a *conspicuous white dorsal line* on the abdomen.

Manusela, 6,000 feet, October to December, 1919, a very long series, but only eight of them ♂ ♂ . Also two ♀ ♀ 4,600 feet, January, 1920.

9. *Prasinocyma simplex* Warr. ♂ .

This species was described (Nov. Zool. xix, 78) from two ♀ ♀ from the Arfak mountains and again three pages later (as *Pyrrhaspis reversa*) from one ♀ from the Snow mountains. Besides these, the Tring museum has a second Snow mountains ♀ . The ♂ has hitherto remained unknown.

♂ . 47 mm.

Palpus with third joint moderately elongate (rather over one-half). Antenna pectinate to about two-thirds, with long, coarse, *Thalassodes*-like branches. Hind tibia not dilated.

Fore wing relatively slightly shorter than that of the ♀ , hind wing with the termen slightly less convex. Similar in colour (or slightly deeper green) and in markings, but with the fringe strongly reddened, in its proximal half mixed with dark-grey.

Central Ceram, 3,000 feet, October to November, 1919.

Three ♀ ♀ , Manusela, 6,000 feet, October to December, 1919, agree with the New Guinea form.

10. *Prasinocyma limpida* sp. nov.

♀ . 34 mm.

Face green. Palpus about 2, third joint somewhat fusiform, nearly 1; green, beneath white. Vertex and antenna white. Occiput green. Thorax and abdomen green above, white beneath.

Fore wing with SC¹ anastomosing with C, R¹ stalked; costal edge buff; wing otherwise subdiaphanous, whitish green, irrorated in varying

degrees with deeper green, which forms a discal dot at the end of cell-fold, faint indications of an anterior one at base of R^2 , a vague basal patch reaching nearly to the antemedian, and moderately broad but ill-defined bands in the median area adjoining the lines; the lines themselves very faintly indicated in whitish, rather widely separated, the antemedian gently curved, the postmedian weakly lunulate-dentate, a little incurved at costa, otherwise fairly direct, slightly less oblique than termen; fringe more whitish green. Hind wing rather broad, the abdominal margin only moderately elongate, termen very weakly bent at R^2 , M^1 very shortly stalked; costal margin whitish; antemedian line wanting, postmedian bent at R^2-M^1 , the rest as on fore wing.

Fore wing beneath green, at base yellower-green costally, costal edge buff, the distal area and fringe almost white. Hind wing almost white, with the celldot and postmedian band greener.

Central Ceram: Manusela, 6,000 feet, October to December, 1919.

If the wing shape be valid as differential (as assumed by me in *Gen. Ins.*) this cannot be placed in *Gelasma*, with which it agrees in facies; but it is becoming increasingly doubtful whether the present classification will hold: *Gelasma balteata* Warr. with more crenulate margins and more contrasted colouring, has much in common with it.

11. *Gelasma pervicax* sp. nov.

♂. 26 mm.

Face green. Palpus fully $1\frac{1}{2}$, third joint fully half second; green, beneath white. Vertex white; occiput green. Antennal shaft white proximally; pectinations long and heavy, as in a *Thalassodes*, continued to beyond two-thirds. Body above green, the abdominal segments with slight white edging; beneath white. Legs white, the fore leg in part green; hind tibia with all spurs well developed, tarsus $\frac{2}{3}$ or almost $\frac{3}{4}$.

Fore wing with SC^1 anastomosing with C and touching SC^2 , R^1 just stalked; green, moderately opaque, costal edge narrowly vinaceous-buff; a darker green celldot; lines whitish, rather deeply lunulate-dentate in reverse directions, the tips of the teeth accentuated in purer white; fringe whitish blue-green. Hind wing fairly broad, termen faintly waved, the tooth at R^2 not strong; M^1 very shortly stalked; as fore wing but without first line.

Fore wing beneath scarcely paler green, with costal edge as above, and with not very sharply defined whitish distal border of about 2 mm. width, spreading posteriorly. Hind wing beneath whitish.

Central Ceram: Manusela, 6,000 feet, October to December, 1919.

Near *submixta* Warr., differing—apart from the structure—in having the celldots and lines stronger.

12. *Metallochlora militaris* T. P. Luc. *apicalis* subsp. nov.

♀.

Fore wing with the terminal dark dashes more elongate than in *M. militaris* T. P. Luc., at the apex extended into a conspicuous, proximally red-mixed spot. Hind wing with the red celldot minute or wanting (perhaps inconstant). Both wings beneath with conspicuous apical spot, considerably enlarged.

Central Ceram: Manusela, 6,000 feet, October to December, 1919, type and paratype.

13. *Hemithea dorsiflavata* sp. nov.

♀. 31 mm.

Face brownish-olive. Palpus over 2, with third joint as long as second; some dark grey admixture on outer side; beneath whitish. Vertex mixed white and buff; occiput green. Thorax and base and 5th—7th segments of abdomen dorsally green; abdomen otherwise whitish, tinged with buff, on upperside clouded with more yellowish buff; crests strong, whitish buff. Fore leg smoky on upper and inner sides.

Fore wing with termen nearly smooth, DC^3 incurved, SC^1 free, R^1 just stalked, M^1 connate; grey-green with some blue or violet iridescence, least developed in median area; costal edge ochreous-buff, dotted with black-grey; lines whitish; antemedian at rather beyond one-third, moderately excurved in cell, slightly at fold; postmedian strengthened by whiter veindots, placed rather beyond two-thirds, inbent at R^2 and incurved between M^1 and SM^2 ; terminal line scarcely darkened, interrupted by minute veindots; fringe with a very pale line at base. Hind wing rather narrow, termen waved, the tooth at R^3 moderately strong; antemedian line wanting; DC^2 slightly darkened, with a very small and inconspicuous whitish mark at its proximal side; postmedian nearly as on fore wing, rather more projecting at R^3 and M^1 ; terminal white dots rather stronger than on fore wing.

Underside whitish green, almost unmarked; costal edge of fore wing pale-buff, not dotted; on hind wing an apical grey shade faintly indicated.

Central Ceram: Manusela, 6,000 feet, October to December, 1919.

Can be placed between *quadripunctata* Warr. and *undifera* Walk.

STERRRHINAE.

14. *Anisodes pauper* Butl. *egens* subsp. nov.

♀. 34—36 mm.

Smaller than *pauper pauper* (New Guinea and eastwards to the Solomons), slightly narrower-winged, of a more fleshy tone, the cell-mark of the hind wing reduced to a dot, the terminal dots of both wings beneath not connected by dark shading.

Central Ceram: Manusela, 6,000 feet, October to December, 1919, type and paratype.

Possibly a separate species.

15. *Anisodes acrobeles* sp. nov.

♂. 41 mm.

Face rosy. Palpus rather over 2, third joint as long as second; pale, the upper and outer side rosy, slightly mixed with black, beneath white. Head whitish brown. Thorax and abdomen concolorous with wings, the abdomen above more vinaceous. Hind leg glabrous, tibia rather short, with three crowded spurs, tarsus long.

Fore wing rather elongate, apex pointed, termen very faintly crenulate; areole present; pale fleshy-brown, with very slight dull-red irroration; rather paler costally and between median and postmedian lines; a black celldot; lines represented by red, black-mixed veindots or short dashes; antemedian with that on SM^2 much more proximal; postmedian rather distally placed, curving slightly proximal from M^1 inwards; the spot on R^2 considerably more proximal, slightly elongate; a rather weak grey median shade, rather more incurved posteriorly than the post-median; faint grey shades defining the subterminal; termen with dots at and between the veins. Hind wing correspondingly marked; in addition, a dark mark on base of SC.

Under side paler, especially on fore wing posteriorly and on hind wing, the fore wing anteriorly with a vinaceous tinge; fore wing with a small celldot and a median shade; both wings with postmedian dots; terminal dots connected by a line.

♀ similar, palpus slightly longer. Sometimes (*ab. argyrostigma* *ab. nov.*) with cellspots white, black-ringed, that of the hind wing larger, more elongate.

Central Ceram: Manusela, 6,000 feet, October to December, 1919, four ♂♂, four ♀♀.

Nearest *penumbrata* Warr., rather narrower, dots more elongate, proximal markings of fore wing beneath more obsolete, &c.

16. *Scopula montivaga* sp. nov.

♂. 35 mm.

Face and palpus black, narrowly pale below. Head and body very pale brown, above irrorated (excepting the vertex and tegulae) with black; collar browner. Antenna with rudimentary pectinations (not as long as diameter of shaft), bearing long fascicles of fine cilia. Fore and middle legs blackened on inner side; hind tibia dilated, with a strong whitish hair-pencil from femoro-tibial joint, tarsus a little shorter, but not greatly abbreviated.

Fore wing with apex moderate, termen oblique, very slightly curved, almost smooth; very pale brown, with fine but rather strong black irroration; celldot sharply black; lines warmer-brown, the antemedian and postmedian very fine, but accentuated by black veindots, the median shade thicker, clearer, just beyond the celldot, but projecting, some slight suffusion around this; antemedian angled outward in cell; postmedian nearer to termen than to celldot, rather oblique outward from costa to R^1 , gently incurved between radials and at fold, the black dots placed at its distal side and slightly elongate; termen with black interneural dots; fringe with smaller dots opposite the veins. Hind wing with termen slightly waved, feebly bent at R^3 ; similar to fore wing but with antemedian line wanting; median and postmedian rather more proximal, the former—by a very slight inward curve—preceding the celldot.

Underside with the ground colour whiter, the irroration in part (especially on hind wing) feeble or obsolete, but with the fore wing as far as to the median shade suffused with smoke-colour (at base of costa black); antemedian wanting; median on fore wing smoky, on hind wing nearly obsolete; postmedian on both wings smoky, with black veindots as above; termen and fringe as above.

Central Ceram: Manusela, 6,000 feet, October to December, 1919.

Perhaps related to *sordida* Warr. (Nov. Zool., ii, 93), but with the pectinations much shorter, the hind tibia shorter, the radial cloudings wanting, &c.

LARENTIINAE.

17. *Gonanticlea subcaesia* Warr. *neutralis* subsp. nov.

♀.

Hind wing and underside of the nondescript purple-grey hue of that of *sublustris* or of the African *meridionata* Walk., instead of the deeper blue-grey colouring of name-typical *subcaesia* from Dutch and British New Guinea

Central Ceram: Manusela, 6,000 feet, October to December, 1919.

Although the palpus is not quite so long as in typical *Gonanticlea* and the termen of the fore wing not bent in the middle, I think this species has more in common with *Gonanticlea* than with *Anticlea* (type *derivata* Schiff.).

18. *Xanthorhoë callisthenes* sp. nov.

♂. 34—37 mm.

Frontal cone well developed. Palpus rather long (almost 2), heavily scaled. Antennal pectination long, ceasing after about the thirty-second joint. Head and body pale-grey tinged with fleshy-ochreous, above with rufous irroration, beneath pale, with the irroration fuscous. Abdomen above with posterior edges of segments pale, preceded by ill-defined dark marks.

Fore wing whitish-grey, slightly glossy, with varying suffusions, throughout with more or less strong rufous irroration; basal patch narrowing to hindmargin, predominantly red, bounded by a lunulate whitish line; succeeding area reddish in proximal half, more ochreous in distal; median band broad, edged by fine whitish lines, which are indented on the veins; anterior half of the band considerably broader than posterior, central part generally pale (containing the somewhat elongate black cellmark), each margin containing three blackish lines (in places connected by dark suffusion), the first of the postmedian series very strongly oblique inwards anteriorly, nearly meeting the last antemedian at costa; the commencement of a zigzag red-brown line at costa beyond median band; subterminal white, interrupted, partly defined by greyish cloudings; a paler patch proximally to it, between SC^5 and R^2 and some pale dots on most of the veins; a small oblique whitish apical dash; terminal line moderate, cut by pale dots at the veins and midway between; fringe with dark spots opposite the veins. Hind wing less rufous, except the abdominal margin, tornus and fringe; markings not strong, not reaching costa, consisting of a pair of grey lines about middle, three lunulate-dentate lines enclosing two paler ones (representing the "rivulet" band of the *Larentiinae*) and a few white subterminal dots.

Both wings beneath strongly rufous-shaded, with black cellmark; the principal lines beyond represented in dark-grey, the distal boundary of median band (indistinctly) in whitish, the subterminal by whitish dots.

♀ more uniformly rufous.

Central Ceram : Manusela, 6,000 feet, October to December, 1919, four ♂♂, four ♀♀.

Nearest to *dissociata* Warr. (Nov. Zool. iv, 73, Luzon), distinguishable at once by the anteriorly more excurved postmedian lines, especially the first one. Like that species, it is evidently variable, especially in the ♂; two are redder than the described type, less unlike the ♀ form, the fourth is a very beautiful aberration with the pale parts almost clear white—*ab. albifusa* *ab. nov.*

19. *Xanthorhoë hedyphaës* sp. nov.

♂. 32 mm.

Structure of the preceding. Head and body darker greyish, the irroration being predominantly blackish, the rufous elements weak and dull (red-brown). Thorax above in part olive-green. Abdomen above with paired black spots.

Fore wing green, with the markings blackish; basal patch less oblique-edged than in *callisthenes*, with a rather deep indentation on M, posteriorly much mixed with green; some dark and whitish costal irroration between this and the median band; median band constricted in middle, the antemedian line being deeply excurved; postmedian rather strongly lunulate-dentate; enclosed area variegated, somewhat mixed with red-brown anteriorly, then with green (including a small black cellmark); a black longitudinal mark in posterior half of cell, and between R^2 and R^3 , behind this some white irroration, finally a green admixture at hindmargin; distal area mostly clear green, but with a variegated (predominantly red-brown) patch at costa and some clear white, dark-edged subterminal dots or dashes in the anterior part (as far as R^3) and again near tornus; apical dash and terminal line as in *callisthenes*; fringe rufescent, with dark spots opposite the veins. Hind wing grey, with traces of alternately paler and darker wavy (or somewhat punctiform) lines in outer part; terminal line and fringe paler and less marked in anterior part than posteriorly.

Both wings beneath more as hind wing above, but with moderately distinct cellspot and postmedian line.

Central Ceram : Manusela, 6,000 feet, October to December, 1919.

20. *Xanthorhoë pratti* sp. nov.

♂. 31 mm.

Structure as in the two preceding. Head and body coloured as in

hedyphaës, the thorax almost without green admixture, the black dorsal spots in abdomen less strong (in the paratype almost obsolete).

Wings similar to those of *hedyphaës*, except as noted below.

Fore wing nowhere clear green, only in the subbasal area, and in a narrow band beyond the median shaded with brownish olive; basal patch more uniformly mixed with red-brown, less deeply indented at M; an ill-defined band in the succeeding area; median band shaped more nearly as in *callisthenes* but less broad, especially at hindmargin, where it is not, or scarcely, half so broad as at costa; its colour is less variegated than in *hedyphaës*, the black longitudinal shade weak; the white defining lines broader; the white subterminal line continuous, though rather irregular, weakly lunulate-dentate, accompanied proximally and distally by irregular brown shadings, and proximally between the radials by well-developed black spots; a small white spot at mid-termen; terminal line broken into sharply-defined pairs of black dots. Hind wing with a pair of fine grey central lines indicated, recalling those of *callisthenes*; postmedian lines excurved behind middle.

Underside rather more heavily dusted than in *hedyphaës*, at least on hindwing; postmedian of both wings excurved at or behind middle.

♀. 34—35 mm.

Slightly darker, median band of fore wing considerably broader.

Central Ceram: Manusela, 6,000 feet, October to December, 1919, two ♂♂, two ♀♀.

GEOMETRINAE.

21. *Bordeta posticigutta* sp. nov.

♂. 46—47 mm.

Face and palpus blackish-brown, palpus paler beneath. Antenna with fascicles of cilia slightly over 1. Thorax above blackish, beneath orange-yellow. Abdomen orange-yellow, with narrow black belts posteriorly on the second to fourth tergites and confluent patches on the fifth to seventh, joining an anal one. Femora and tibiae in part (chiefly beneath) orange.

Fore wing not narrowed, venation not distorted, cell about half, SC^{1-2} coincident, connected by a bar with stalk of SC^{3-4} ; black-brown; markings white, very slightly sprinkled with pale orange-yellow scales; a small or moderate, rather oblique patch in cell near its end, posteriorly crossing M, on which, however, it is sometimes dotted with blackish; a narrower, usually longer patch from C to R^3 or M^1 ,

attenuated anteriorly, crossing the base of SC^5 , tapering posteriorly; a small spot at M^2 close to termen; often also a minute one on SM^2 , slightly more proximal. Hind wing bright orange-yellow, with brown-black (before C greyer) distal border, which is about 7 mm. wide in anterior part, gradually tapers from radial fold to tornus (where it is less than 3mm.) and encloses a small or moderate posterior orange-yellow spot.

Underside the same, only with the forewing—especially posteriorly—slightly paler,

Central Ceram: Manusela, 6,000 feet, October to December, 1919, type and 13 paratypes; 4,600 feet, January, 1920, 4 paratypes.

Broader-winged than *lemnica*, R^1 of fore wing not stalked, maculation of abdomen and wings quite distinct. From *tricolor* Warr., and *klossi* Roths., apart from other differences, it is distinguishable by the uniformly dark tegulae. The markings of the fore wing vary between white and pale buff, as well as varying in size; subternal spot of hind wing also variable in size.

22. *Eucharidema apora* sp. nov.

♂.

Similar to *trichroa* Roths. and Jord. Fore wing with the band white in all the known examples, not broader beneath than above. Hind wing with red-orange band very variable but always much reduced, never reaching the costal margin; in the extreme in one direction (labelled 8/8), *vide* Bull. Hill Mus. 1, 7, it is only 1 mm. wide and does not cross R^3 forward, while in the other extreme (1/8) it widens to almost 4 mm. at R^3 , thence tapering rapidly, continuing extremely attenuated from R^1 to C.

Central Ceram: 4,600 feet, January, 1920, 8 ♂♂, the holotype labelled 1/8; Manusela, 6,000 feet, 3 ♂♂, October to December, 1919.

♀.

The ♀, which must surely belong here, in spite of remarkable differences in venation, has the structural characters of a simple *Craspedosis* or *Milionia*, SC^{1-2} (coincident) of the fore wing arising from the cell and running free midway between C and SC^{2-5} , R^2 from middle (or slightly before middle) of discocellulars. Fore wing with the band usually creamy-white (slightly less pure than in the ♂), on an average broader (but variable), slightly more distal, or at least more oblique outwards, forking about M^2 , its proximal and more slender branch (which, however, may become obsolete or be

interrupted) running to hindmargin near tornus, its distal (rarely interrupted, never obsolete) towards hind margin, which it almost (but never quite) reaches between M^1 and fold; in one aberration there is also a small white spot in the cell, near its end. Hind wing with the orange band less variable than in the σ , averaging about 2 mm. in width, just crossing R^3 .

Note.—In Rothschild and Jordan's original description of this genus (D. E. Z., 1907, p. 197), "second and third radials" is a laps. cal. for "first and second."

φ , ab. *dichroa* ab. nov. Band of fore wing orange.

Central Ceram, 4,600 feet, four $\varphi \varphi$ typical, four ab. *dichroa*; Manusela, 6,000 feet, nine $\varphi \varphi$ typical, one ab. *dichroa*.

The φ forms much resemble the enigmatical *Craspedosis bicolorata* Warr. (see supra), but differ in the clearer, differently shaped markings (that of hind wing not so reduced) and in the lack of yellow on abdomen posteriorly beneath. Probably *fractura* Prout is really nearer to *apora* than is *trichroa*, but its φ is still unknown; in that of *trichroa* the venation agrees with that of the σ .

23. *Milionia leucomelas* Montrz., *scotomelas* sp. nov.

σ .

The yellow band of the hind wing above greatly reduced, forming a short triangle which tapers to a point at M^1 or R^3 and is generally much dusted over with black scales, in extreme aberrations entirely suppressed, as in the φ ; beneath generally with hardly a suggestion of yellow scaling.

φ .

Hind wing above and beneath entirely black, or rarely with a yellow subternal dot. Abdomen with the black belts commonly much broadened, reducing the yellow to very narrow rings.

Central Ceram, 3,000 feet, January to February, 1920, six $\sigma \sigma$ five $\varphi \varphi$, including the type σ and the allotype φ ; 4,600 feet, January, 1920, one σ , two $\varphi \varphi$.

M. leucomelas Montrz. (Faune Woodlark, p. 131, 1856) is the oldest name for the collective species which has commonly been called *callimorpha* Oberth.; *leucomelas leucomelas* supplants *callimorpha brevis* Roths.

24. *Milionia talboti* sp. nov. σ . 43—48 mm.

Eye hairy. Head and body black, with strong admixture of blue or green according to the angle of light) metallic scaling.

Fore wing black with deep-purple gloss and with short or moderate streaks of metallic blue (or green) along proximal part of M and of SM²; an elongate scarlet spot just outside cell, in one aberration reaching C anteriorly and crossing M¹ posteriorly, but usually shorter; sometimes also a small scarlet dot before SM² about 3 mm. from termen. Hind wing black with the purple-blue suffusion somewhat stronger, the proximal streaks of metallic blue extending to middle of wing or rather beyond, sometimes broad and more or less confluent and extended anteriorly; occasionally with a small red mark at SC²—R¹ close to termen (in one example present above and beneath, in one beneath only).

Underside with the proximal blue more extended and less shot with green, the red markings of upperside reproduced.

Central Ceram: Manusela, 6,000 feet, October to December, 1919, six σ σ .

Fore wing in general with more, hind wing with less blue than in *rubrifascia* Joicey and Talbot, the red band shorter.

25. *Milionia lacteisticta* sp. nov. σ . 32 mm.

Eye with the hair excessively minute. Face rougher than in typical *Milionia*, palpus shortish, the second joint with some projecting hair beneath. Antennal ciliation normal. Hind tibia not dilated. Head and body black, slightly mixed with blue; fourth, fifth and sixth segments ventrally, the latter two also laterally, bright yellow.

Fore wing rather long and narrow, termen scarcely oblique anteriorly, moderately oblique posteriorly; fovea wanting; R¹ shortly stalked with SC³⁻⁵; brownish-black, shot with blue at base; a cream-white spot beyond middle of cell, about 1 mm. wide anteriorly, (at SC), tapering and becoming rather oblique posteriorly, just crossing M; fringe whitish. Hind wing strongly shot with blue except at margin; an elongate cream-white midcostal spot, bounded posteriorly with SC; fringe whitish.

Fore wing beneath rather less dark, suffused proximally (to end of cell) and posteriorly as far as tornus with grey-blue; spot in cell purer

white than above and with a narrow bluish-white circumscription which makes it appear larger. Hind wing with white costal patch, otherwise blue to beyond end of cell and to tornus; a brownish-grey distal border, separated in its broad anterior part from the blue colour by an ill-defined patch.

Central Ceram: Manusela, 6,000 feet, October to December, 1919.

The exact systematic position somewhat doubtful.

26. *Milionia dispar* sp. nov.

♂ ♀. 31—35 mm.

Structure of the preceding, the female antennal ciliation very short; R¹ of fore wing separate or connate, not stalked. Head and body coloured as in the preceding, the yellow abdominal patch of the female much duller (reddish-buff), and extended to anus.

♂. Wings shaped nearly as in the preceding. Fore wing brownish-black, shot with blue at base; a large orange patch proximally to middle, its main portion roughly oval but flattened anteriorly, (at C), running rather obliquely outward (so that its distal edge crosses M near the end of the rather long cell), nearly reaching to SM²; variable extensions of this patch proximally; a slender, strongly curved orange band well beyond cell, reaching from SC⁵ to fold; fringe whitish. Hind wing broadly black apically and terminally, shot with blue on abdominal margin; a large orange patch from base, reaching costally to beyond two-thirds, posteriorly to fold, its distal extremity 3—4 mm. from termen; fringe whitish.

Underside similar, the distal borders in places suffused with brownish.

♀. Wings similarly shaped. Fore wing with the orange parts much paler (whitish-buff), ampler, the extensions of the proximal blotch reaching the base; termen broadly suffused with orange-brown, leaving irregular dark streaks on the veins. Hind wing with the orange parts of the male similarly lightened, the apical and distal border entirely dull orange. Both wings predominantly dull orange; fore wing with costal edge, discal band and abdominal margin irregularly dark blue-grey, proximal area in one example whitish-buff; hind wing also paler proximally, a large triangular area at abdominal margin, dark blue-grey.

Central Ceram: Manusela, 6,000 feet, October to December, 1919, two ♂ ♂, two ♀ ♀.

27. *Ctimene ocreata* sp. nov.

♂. 37—41 mm.; ♀, 40—44 mm.

Head, body and legs black; tegulae orange.

Fore wing banded, black and orange; basal patch black, extremely obliquely bounded, only 2 or 3 mm. wide at costa, 5 mm. or more at hindmargin, sometimes narrowly joined along hindmargin to next black band; succeeding band light orange, fading to whitish buff; a broad (5—8 mm. variable) black band from beyond middle of costa to tornus, its proximal edge somewhat sinuous, often indented at fold, or sometimes behind SM^2 , its distal edge very gently excurved between R^1 and M^1 , meeting terminal black line before M^2 ; a narrow or moderate leg-and-foot-shaped orange subapical band, the sole of the foot running close to termen from R^2 , the toe between M^1 and M^2 ; termen and fringe black. Hind wing orange; abdominal margin broadly black; termen narrowly black; fringe black.

Under side the same.

Central Ceram: Manusela, 6,000 feet, October to December, 1919, eleven ♂♂, twenty-five ♀♀, including the type and allotype; 3,000 feet, December, 1919, one ♂; January to February, one ♂, two ♀♀.

An aberration—represented by the ♂ from 3,000 feet, January to February, 1920, and one ♀ from Manusela—has an orange spot in the middle of the black band (behind the base of R^3).

28. *Abraxas monychata* Feld. *ceramensis* subsp. nov.

Abraxas albiquadrata Roths., Nov. Zool. 22, 217 (1915) (nec. Warr.).

♂ ♀.

Fore wing with some orange basal and subbasal spots, one of the latter (behind base of cell) extending a little along SM^2 . Hind wing with the white band reaching abdominal margin. Differs on the hind wing from those specimens of *monychata arfaki* Beth.-Bak. in which the post-discal white band of fore wing is uninterrupted in retaining the white subbasal band, or at least traces of it.

Central Ceram, 3,000 feet, January to February, 1920, type ♂ and two ♀♀.

Felder's type was merely labelled "Moluccas" and may have come from Celebes, but I am provisionally uniting it with *albiquadrata* from the North Moluccas (though it is a very different aberration), which has the abdominal margin of the hind wing black, &c.

29. *Arycanda boöpis* sp. nov.

♀. 42—45 mm.

Face grey. Palpus and vertex darker grey. Thorax and abdomen grey, shaded with bluish, especially dorsally.

Fore wing relatively rather short; cell fully one-half; glossy light grey-blue, the costal margin somewhat irrorated with black, especially at base; some black spots or rudimentary lines near base; lines black; antemedian at one-fifth, not very strong, more or less macular; very large (circ. 3 mm. in diameter) deep black cellspot, shortly followed by the postmedian line, which is nearly perpendicular from costa to R^3 , here angled, then gently incurved, and is very fine and weak except at the veins, where it is cut by longitudinal short dashes or dots; a very broad black border, nearly reaching the postmedian; fringe grey, mottled with black. Hind wing with cell $\frac{1}{2}$ or slightly over; as fore wing (the cellspot slightly less large). Underside without the lines; cellspots and borders as above.

Central Ceram, 4,600 feet, January, 1920, type and three other ♀ ♀ in coll. Joicey; also a rather smaller example of the same sex (38 mm.) taken at 3,000 feet, January to February, 1920.

30. *Arycandu tenebrica* sp. nov.

♂ ♀. 40—50 mm.

Head and body mixed slate-grey and brown-grey, anal tuft tinged with ochreous; abdomen dorsally with indication of paired dark spots. Antennal ciliation in ♂ slightly over 1, in ♀ slightly under 1.

Fore wing with fovea in ♂ rather less strong than in *hypanis* Cram., in ♀ almost wanting; slate-grey, darker than in *hypanis*, the black markings numerous and heavy; vague basal irroration or maculation; a subbasal band of rather large spots, acutely angulated outward in cell, then oblique inward; a thick, curved, antemedian line; a rather large cellspot (less large than in *hypanis*); the succeeding line still more excurved round cellspot than in *hypanis*, incurved to fold; two rows of long thick interneural marks beyond, weakened—especially the distal—in cellule 3, sometimes partly confluent, the distal row reaching the subterminal; terminal interneural marks, less strongly developed than in *hypanis*; fringe concolorous. Hind wing with the costal margin almost as clear as in *hypanis*, unmarked as far as postmedian line, the rest concolorous with fore wing; median (antemedian) line curved or bent; cellspot and markings beyond nearly as on fore

wing, the postmedian more macular, the two series beyond more rounded.

Underside with cellspots and dark borders, recalling that of *boöpis*.

Central Ceram, 4,600 feet, January, 1920, type and paratype ♂, allotype and paratype ♀; Manusela, 6,000 feet, October to December, 1919, three ♀♀.

31. *Hypochrosis agalma* sp. nov.

♂. 34—37 mm.; ♀ 42 mm.

Face olivaceous, in lower half overlaid with red-ochre, in upper half with black. Palpus orange, distally red on outer side. Vertex blackish. Body orange, overlaid dorsally (except at anal end) with blackish.

Fore wing rather less acute than in *festivaria* Fabr.; ochreous, tinged (particularly along SC) with orange, and rather strongly, but irregularly, strigulated with dark grey; strigulation heavy and black-mixed in costal region (except at apex); markings very dark green, almost black; proximal patch slightly variable, at hindmargin occupying approximately the second quarter, in its distal half suggesting a neck, its anterior half broadening distally, forming a rough figure of a head, with flattened crown (behind SC) and more or less projecting nose and chin (between bases of medians); distal patch irregularly oval, oblique, placed between SC⁵ and R³; a pale shade distally to the "neck," a slaty-grey cloud distally to the "nose and chin"; fringe orange, from apex to behind SC⁵ blackish. Hind wing broadly orange costally, narrowly orange at abdominal margin; the rest concolorous with fore wing, with a black-green posterior patch, large, but less so than in *festivaria*.

Underside bright orange, slightly reddish. Fore wing with costal edge yellow, with a few blackish dots; an irregular black-grey shade embracing the anterior part of proximal patch (in cell), the distal patch and the dark grey cloud; fringe as above. Hind wing unmarked.

Central Ceram: Manusela, 6,000 feet, October to December, 1919, 3 ♂♂, 1 ♀.

Walker's *imbutaria*, of which I only know the original 3 ♀♀ (Mysol and Aru), is slightly smaller than the ♂ of *agalma*, face unicolorous ochreous, wings more fawn, with the markings much weaker, differently shaped; *nundata* Feld. (perhaps from Celebes only, though Felder's type is registered from "Moluccas"), is longer-winged,

with only weak remnants of the fore wing markings and these *costal*, and I cannot think Swinhoe right in sinking it; *chlorophora* Warr. (Nov. Zool. 4, 120, from Wetter) is another relative.

32. *Hypochrosis pachiaria* Walk. *obnubilata* subsp. nov.

♀. 65—68 mm.

Larger and more deeply coloured than *pachiaria pachiaria* from India, Burma, the Andamans, and Hainan, the "rufous" areas strong, considerably mixed with slate-grey or violet-grey (in one aberration predominantly slaty).

Central Ceram: Manusela, 6,000 feet, October to December, 1919, 7 ♀ ♀.

Variation slight. The very variable *miliaria* Swinh., from the Nilgiris, which I agree with Swinhoe in regarding as a separate species (rounder-winged, etc.), occasionally throws aberrations somewhat resembling *obnubilata* but which cannot be confused with it. The new race, or a closely similar one, occurs also in Dutch New Guinea, but as I have only 2 ♀ ♀ and 1 ♂ before me, I leave dealing with them for a future occasion.

NEW FORMS OF MOTHS FROM NEW GUINEA AND SOUTH AMERICA.

By J. J. JOICEY AND G. TALBOT.

ARCTIIDAE.

1. *Depalpata pridgeoni* sp. nov.

The second species known of this very curious genus, described by Lord Rothschild in Ann. Mag. Nat. Hist. (9) 3, p. 488 (1919), from British New Guinea.

♂. Upperside of fore wing deep-black. A white, curved, comma-shaped subbasal stripe from vein 4—9. Hind wing glossy cyaneous. A large, white, somewhat oblong discal patch, between veins 3 and 7, inner edge close to the angle of the discocellulars. A small, white, subbasal spot on lower edge of cell. Some fuscous hair at base.

Underside of fore wing blue-black with white markings as above. Stripes of fuscous-black modified scales in 1c, 2 and 3, and outer margin narrowly bordered with similar scales. Hind wing blue-black with discal spot as above. Subbasal spot larger than above, crossing the cell, area between vein 3 and inner marginal fold covered with fuscous-black modified scales to within a third from base.

Head, palpi, antennae, and thorax black. Collar and sides of pectus orange-yellow. Abdomen metallic cyaneous, with orange lateral and anal tufts, laterally deep-black, ventrally fuscous-black with bluish tinge. Legs fuscous-black, fore tibia orange-yellow on inside; femora at base with orange-yellow tuft.

Length of fore wing: 24 mm.

Dutch New Guinea: Mount Kunupi, 6,000 feet, November to December, one ♂.

This genus was placed by Lord Rothschild in the *Agaristidae* near *Burgena* (*Damias*). There is no doubt that our specimen belongs to this genus, as the pattern and build are similar, whilst there are similar patches of modified scales on the underside. There exist however some very significant differences which cause us to regard the insect as

an Arctiid near *Spilosoma*. We therefore place it provisionally in *Depalpata*.

Differs from *D. mirabilis* Roths. in the palpi being well developed and porrect, longer than in *Spilosoma*. Frons roughly scaled, narrow, and produced much as in *Spilosoma*. Antennae minutely serrate and fasciculate; this is not so in *Agaristidae*. The retinaculum bar is placed on the costal vein and directed to the edge of the cell as in *Arctiidae*, but in *Agaristidae* this bar is placed along the costal vein. Furthermore in *pridgeoni* the hind wing has vein 8 anastomosing with cell to the middle, and vein 5 from the point of divergence of 3 and 4, all on a long stalk, the cell being very short and the discocellulars strongly angled.

Considering these characters, the insect cannot be an *Agaristid* and must be referred to the *Arctiidae*. We may be dealing with another new genus but until more is known about *Depalpata* it may not be wise to create another genus.

AGARISTIDAE.

2. *Argyrolepidia aurea* Jord. angustifascia subsp. nov.

♂. Fore wing with a much narrower band, the reduction being proximal. Hind wing with a narrower black distal margin, and deeper orange area which has a nearly straight and sharply defined outer edge curved posteriorly.

Underside of hind wing with smaller orange area and broader basal and costal black.

Abdomen below with the terminal four segments scaled with orange. Dutch New Guinea: Wanggar, February, one ♂.

3. *Seirocastnia albifascia* sp. nov.

♀. Fore wing black-brown, crossed by a broad white band from the costa to submedian. This band has the outer edge curved and more sharply defined than the inner edge; inner edge crosses the base of cellules 3 and 6 and borders the discocellulars. The band narrows below vein 2 and is rounded off at this end close to the tornus. Hind wing black-brown with a deep blue sheen.

Underside with the band a little broader. Fore wing with the submedian area paler. Hind wing as above.

Antennae, head, thorax, and abdomen above, fuscous-black. Palpi with the first segment yellowish-white at the side. Legs fuscous-black,

fore-legs (except tarsi) fringed with yellow hair. Ventral surface of abdomen a little paler than the rest.

Length of fore wing : 28 mm.

French Guiana, St. Laurent du Maroni, July, one ♀, ex coll. Brabant.

This species resembles exactly the Dioptid, *Sagaris poliana* Druce, which we only know at present from British Guiana.

MEGALOPYGIDAE.

4. *Unduzia dyari* sp. nov.

We are indebted to Dr. Harrison Dyar for information on this interesting species, which is allied to *gistinda* Dyar (Proc. U. S. Nat. Mus. 47, p. 252, 1914, Panama Canal Zone). This, however, is the same as *pellucens* Dogn. (Mem. Soc. Ent. Belg. xix, p. 171, 1912, Venezuela), so Dr. Dyar informs us, and will therefore sink as a synonym.

♀. Wings more pointed and outer margin more oblique than in *gistinda*. Fore wing with vein 7 and 9 arising from the same point on 8, whilst in *gistinda* 9 arises from the base of the stalk in one specimen, shortly on the stalk in a second, and distinctly from the cell in a third. Hind wing with discocellulars less strongly angled than in *gistinda*.

Wings transparent, covered with short blackish hair, and without any trace of markings. Antennae, head, thorax, abdomen, and legs chaetura-black (xlvii); tegulae with a tuft of white hair; legs fringed with white hair on the outer side, especially the tibia.

Length of fore wing : 27 mm.

Ecuador, one ♀, ex coll. Brabant.

NEW FORMS OF THE GENUS *DELIAS* (PIERIDAE) FROM NEW GUINEA, CERAM AND BURU.

BY J. J. JOICEY AND G. TALBOT.

The forms herein described were collected by Messrs. C., F., and J. Pratt, unless otherwise stated.

The localities mentioned in connection with the forms described from Dutch New Guinea are as follows:—

1. Wanggar, South Geelvink Bay, February, 1921.
2. Nomnagihé, 25 miles south of Wanggar, 2,000 feet, January to February, 1921.
3. Djalan River, South Geelvink Bay, ca. 28 miles inland, May to June, 1920.
4. Wai Sai River, Weyland Mountains, 1,000 feet, June to July, 1920.
5. Menoo River, Weyland Mountains, 3,500 to 5,000 feet, November to January, 1921, also 6,000 to 8,000 feet.
6. Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, November to January, 1921.

1. *Delias enniana* Ob., *majoripuncta* subsp. nov.

♂. Upperside with white submarginal spots larger than in other races, and the black margin a little less broad than in the type form. Hind wing with marginal spots as in allied forms.

Underside of fore wing with extended white area, especially in cellule 4. Submarginal spots large, especially the one in 6. Hind wing much as in the typical form, but with larger and entirely yellow submarginal spots.

♀. Upperside similar to the form *kapaura* Roths., but the black margin of the fore wing not so produced in cellule 4 and narrow in the apical region. Hind wing with black margin as in *kapaura*.

Underside of fore wing with black margin slightly broader than in the ♂, and bearing equally large spots. Hind wing with black margin as in the type form, but bearing larger spots.

Mefor Island, August, one ♂, two ♀♀.

2. *Delias subviridis* sp. nov.

A very distinct form, bearing a curious likeness to *echidna* Hew., on the hind wing below. It is probably related to *agostina* Hew.

♂. Upperside white. Fore wing with black margin dentate on the veins, reaching to the base of vein 7 and narrowing to vein 3. Hind wing without any border.

Underside of fore wing black, greenish at the base, inner margin white, mixed with black in 1b and 1c, and more so in the base of cellule 2 and in the cell. Submarginal spots of citron-yellow (xvi) divided by the veins and distally pointed between the veins; these spots large and narrowing to the inner margin, the one in 3 outwardly rounded, the last two close to margin. Hind wing olive-yellow (xxx), costal area citron-yellow. A thin black submarginal line, parallel to margin and not distinct above vein 5; the veins black between this line and the margin, with small black spots on their ends. The marginal interspace anteriorly yellow.

♀. Upperside smoky greenish-white produced by a thin layer of yellowish-white scales on a black ground. Fore wing with black margin more strongly dentate than in the ♂, and the veins more heavily black distally than in the ♂. A dark postdiscal shade occupying the same position as the black band in *agostina* ♂. Hind wing with a marginal dark shade. Basal half of wing darker and merging into the distal half.

Underside as in the ♂. Hind wing with the yellow costal area only slightly indicated.

Length of fore wing: ♂ 29 mm., ♀ 31 mm.

Central Ceram: Manusela, 3,000 feet, October to December, a small series of both sexes.

3. *Delias vidua* sp. nov.

At the time of writing the ♂ of this insect is unknown. The ♀ presents a curious resemblance to that sex of *isse echo* Wall., but as this is the Buru race of *isse* we are probably dealing with quite a distinct form.

♀. Underside of fore wing with white area more extended than in *echo*, reaching the end of cell, and curving outwards by the origin of vein 4 to the tornus. Hind wing with white basal half reaching beyond the cell.

Underside of fore wing with sharply-defined yellowish-white area as above. Five pale yellow submarginal dots, those in 2 and 4 farther from the margin than in *echo*. Hind wing with basal yellow area not

well defined, but reaching base of vein 6. Submarginal series of yellow spots placed a little farther from the margin than in *echo*.

Length of fore wing: 34 mm.

Buru, October, 1918, one ♀ (W. J. C. Frost).

4. *Delias gabia* (Bdv.) *aurantimacula* subsp. nov.

Distinguished by the orange patch on the hind wing below being smaller than in the allied forms *felsina* Fruh. and *scribonia* Fruh.

♂. Upperside as in *gabia* from Waigeu but with a slightly broader margin to the hind wing.

Underside of fore wing as in the type form. Hind wing with orange from the submedian to vein 3, with slight orange scaling in cellule 3. The orange colour varies in extent but rarely reaches the cell, and ranges from deep orange to yellow orange, being in one specimen almost merged with the remaining yellow, so that this individual would be like the type form, except that the median area is a darker tint. The marginal band not broader than in the type form and either spotted or unmarked.

♀. Upperside of fore wing as in the type form. Hind wing with slightly broader margin.

Underside of fore wing as in the type form. Hind wing with broader black margin, much as in *scribonia*. The submarginal spots of both wings are deeper orange than in the type form. The orange median area as in the ♂, but reaching vein 4.

Nomnagihé, 2,000 feet, January to February, a small series of ♂♂ and two ♀♀ (types). Wanggar, February, five ♂♂ two ♀♀; Wai Sai River, 2,000 feet, June to July, four ♂♂; Arfak Mountains: Mount Misresi, 3,000 feet, January, one ♂ one ♀; River Uty, 1,500 feet, March, three ♂♂.

The series does not contain any specimens which we could associate with *zarate* Smith. Lord Rothschild has recorded (B.O.U. & Woll. Exp. Lep. 1915) both species from the Snow Mountains. A specimen from the Oetakwa River was described by him as *zarate flavidior* (p. 5) and on p. 6 he records *gabia* Bdv. from the same place at a lower elevation. Specimens in the Joicey collection from the Oetakwa River belong to *gabia felsina* Fruh. We are still unable to distinguish *gabia* from *zarate* on the material available and a gradual racial transition appears to exist. The race *callistrate* Smith, from Fergusson Island, is better defined than any of the other forms.

In some specimens of *gabia* from Waigeu, a small splash of orange is found in the median area.

5. *Delias ladas* Sm. *levis* subsp. nov.

The Dutch New Guinea form.

♂ ♀. Upperside of fore wing with more extended white area, principally in cellules 3-5, not to such an extent as in the race from Waigeu.

Underside of fore wing with the cell white, also base of cellule 4 and with more or less white scaling in 5.

Menoo River, 3,500 to 5,000 feet, November to January (Types); Mount Kunupi, 6,000 feet, November to January; Nomnagihé, 2,000 feet, January to February; Angi Lakes, Arfak Mountains, 6,000 feet, January to February; Wandammen Mountains, 3,000 to 4,000 feet, November. A series from these localities. Also from Mount Misresi; Arfak Mountains, 3,000 feet, January, one ♂; Coast district, Geelvink Bay, November, one ♂; Momi, Arfak Mountains, 4,000 feet, November to December, one ♂ one ♀; Oetakwa River, Snow Mountains, to 3,500 feet, November to December, one ♂.

The majority of these specimens belong to this form, but a few typical examples occur. The type form comes from "German New Guinea," and also occurs over British New Guinea, though a specimen from the Hydrographer Mountains is like *levis*.

6. *Delias rileyi* sp. nov.

Allied to *jordani* Kenr., which is a species distinct from *cunningputi* Ribbe.

♂. Upperside of fore wing with white proximal half which projects distad along vein 2, slightly indented on veins 2 and 3 and more so on vein 4. The cell is only slightly invaded at its lower and upper angle. Hind wing with narrow black margin, broader between costa and vein 5, then tapering off and becoming merged in the white area.

Underside of fore wing with white proximal half. A basal costal streak of cadmium-yellow (iii), where in *jordani* there is black scaling. The white area does not reach end of cell, and below vein 4 reaches farther distad than on the upper side. A subapical costal white stripe, curved outwards to vein 5, thence downwards to 4 and just below this vein connected by faint scaling to the edge of the white area. A submarginal series of seven dots, the anterior and subapical four yellow, the lower ones white. Hind wing with brown colour more blackish than in *jordani*, markings deeper or cadmium-yellow. Costa white, yellow at extreme base. A rounded yellow spot slightly white on its distal edge in cellule 7 and touching vein 8; a little beyond this an oblong white spot posteriorly edged with yellow, reaching from costa nearly to vein 6; a small rounded spot in the cell below vein 6; a post-

discal series of intranervular streaks in 1c, 2, 3, 4 and 5, with some faint yellow scaling on either side of them and a faint distal edging of white, outlining a band which would occupy the same position as the band found in *jordani*. A submarginal series of six yellow spots.

Length of fore wing: 28 mm.

A larger species than *jordani*.

Menoo Valley, 6,000 to 8,000 feet, January, 1921, one ♂.

7. *Delias cunningputi* Ribbe, *citrona* subsp. nov.

Allied to *C. fascelis*, Jordan, from Mount Goliath. Distinguished by the yellow proximal area of both wings.

♂. Upperside of fore wing with basal area as in *fascelis* but citron-yellow. Two subapical yellow dots. Hind wing with proximal area citron-yellow and but slightly incurved between veins 4 and 6. Fringes worn.

Underside of fore wing as in *fascelis*, but the subapical spots darker yellow, and discal shading yellowish and more extended. Hind wing much as in *fascelis*. The postdiscal band is much broader both in its yellow and white portions. Submarginal spots deeper yellow. Cellules 2 and 3 with yellow powdering between the band and submarginal spots.

Menoo Valley, 3,500 to 5,000 feet, December and January, one ♂.

8. *Delias microsticha* Roths.

Nov. Zool. xi, p. 315, pl. 2, figs. 18, 19 (1904) (Aroa River).

A series of this species was obtained in the Weyland Mountains, between 3,500 and 6,000 feet, November to January. We have also a specimen from the Wandammen Mountains, farther north, at 6,000 feet, November.

It is interesting to note the great range of this form. The race *flavopicta* Jord., is confined to the Arfak Mountains.

Two of the three female forms were obtained in the Weyland Mountains, and specimens transitional to the other form with ♂-like hind wing and yellow discal area on fore wing.

9. *Delias lecerfi* sp. nov.

This appears to possess no near ally, but may belong to the group represented by *aroae* and *phaeres*.

♂. Upperside of fore wing with basal two-thirds white, the outer edge of this area curved inwards to costa at vein 6 and oblique from 6 to submedian. Hind wing white with a thin black marginal line. Fringes black.

Underside of fore wing with lower two-thirds of cell from base to apex white, this colour extending as a spot above vein 4 and sometimes reaching the costa as a streak, extending to vein 2, sometimes to 3, and to the inner margin. A series of 4 subapical spots, lemon chrome (iv), the larger at the costa. Ground-colour fuscous-black (xlv). Hind wing fuscous-black. A coral-red (xiii) basal spot on the extreme basal edge of costa. One specimen has this spot lemon-chrome. Other spots lemon-chrome; one in 7 at middle, one in cell below 6, one in 6 near the apex and a costal streak above it; postdiscal short strigae in 1c, 2—4, sometimes faint, and a series of antemarginal dots on the folds. A thin pale grey marginal line.

♀. Upperside of fore wing with slightly larger distal black area. Hind wing with black apical margin about 2 mm. wide and tapering to vein 5, below which the marginal line is thicker than in the ♂.

Underside as in the ♂.

Length of fore wing: ♂ ♀ 24 mm.

Menoo Valley, mostly at 4,000 feet, but also at 3,500 and 5,000 feet, November to January, a series of ♂ ♂ and two ♀ ♀.

10. *Delias aroae* Ribbe *yabensis* subsp. nov. and ♀ f. *brevifascia* f. nov.

Distinguished from *aroae* from British New Guinea and the Arfak Mountains by reduced black apical area on the fore wing and broader yellow band on the hind wing below.

♂. Upperside of fore wing with distal black narrower, especially in cellules 4 and 5. Hind wing with reduced marginal black.

Underside of fore wing with the white area continued from veins 4 to 9, and the costal black forming a triangular patch over the upper angle of the cell. The white spots beyond the cell vary in size and are rarely absent as in the typical form. Subapical spots as in the type form. Hind wing with broader yellow discal band, larger cellspot and larger marginal spots.

♀. There are two forms. The typical form is similar to the known ♀ of *aroae*. Upperside of the fore wing with a black discocellular mark and the white area extending more or less into cellules 4 and 5. Hind wing as in the typical form. Underside as in the ♂, the discal band of hind wing with white ground colour as in type form.

♀ f. *brevifascia*.

Upperside of fore wing as in *yabensis*. Hind wing with a narrow black margin of almost even width. Underside of fore wing as in *yabensis*. Hind wing with discal band ending as a yellow spot between

veins 2 and 3, and further indicated by a yellow streak in 1c. Marginal yellow spots smaller and absent before vein 2.

Menoo River, 3,500 to 5,000 feet, November to January; Mount Kunupi, 6,000 feet, November to December; Djalan River, May and June. A series of ♂♂ and a small series of both ♀ forms from Menoo River and Mount Kunupi.

11. *Delias phaeres* Jord: *approximata* subsp. nov. and ♀ f. *rectimargo* f. nov.

This species was regarded by Dr. Jordan (Nov. Zool. xviii, p. 588, 1911), as a race of *aroae*, which was a quite justifiable conclusion upon the evidence then available. We have however received a race of *aroae* from the same locality as *phaeres*, and these must be treated now as distinct species, although they are remarkably alike. The present race presents some of the characters of *aroae*, but is distinguished by the extension of the black distal area of the forewing to the discocellulars on the upper side and into the cell on the underside.

♂. Upperside of fore wing with the black entering the end of the cell but slightly, and mostly bordered by the discocellulars. The white patch in 3 mostly larger than in the type form. Hind wing as in the typical form.

Underside of fore wing with a white cell-stripe as in *aroae* and not reaching the discocellulars. The white area in 3 larger than in the type form, and the black distal margin narrower on veins 2 and 3. Hind wing with discal band a little broader than in type form.

♀. There are two forms as in *aroae*, and these present similar characteristics. The typical form differs on the fore wing above and below in the extended white area as in the ♂, and the hind wing is similar to the ♂.

♀ f. *rectimargo*. Similar to the form *brevifascia* of *aroae*, but presents the characteristic broad black margins of *phaeres*. Underside of hind wing with discal band reaching 1c, where it is greatly narrower. Marginal spots small.

Menoo River, 3,500 to 5,000 feet, November to January; Mount Kunupi, 6,000 feet, November to January. A series of ♂♂, a small series of typical ♀♀, and three specimens of f. *rectimargo*.

12. *Delias nàis* Jord.

Nov. Zool., xviii, p. 587 (1911) (Mount Goliath).

This species was fairly plentiful on the Menoo River and Mount

Kunupi, between 4,000 and 8,000 feet, November to January. It exhibits some variability in the pattern of the hind wing below, and we are unable to make any racial distinction.

The specimens from the Weyland Mountains show a tendency to a reduction of the black markings on the hind wing below. About half or less of the total number of individuals show the subbasal band broken in the cell, and a good many specimens have narrow black streaks on the veins.

13. *Delias nais* Jord. *aegle* subsp. nov.

Distinguished from the typical form by the smaller brown markings on the hind wing.

♂. Upperside of fore wing with the black area extended to vein 3, its edge straight and crossing the cell at nearly opposite vein 3. Hind wing with broader black border.

Underside of fore wing as in typical form. Hind wing with smaller brown spots and larger black discal area.

♀. Upperside with broader black margins than in the ♂.

Underside of hind wing with markings as large as in the ♂ of the type form, but smaller than in its ♀.

Biagi, Mambare River, British New Guinea (Meek), three ♂♂, two ♀♀.

At Owgarra in the same region, the allied *bornemanni* Ribbe occurs, and it is possible that *nais* may be a race of this, as was considered by Jordan, *l.c.*

14. *Delias isocharis* Roths. *latiapicalis* subsp. nov.

Distinguished by the narrow black distal border of the fore wing.

♂. Upperside of fore wing with black distal area much narrower than in the type form and more as in *ligata*; its edge is straight and oblique to the margin. Hind wing as in the type form.

Underside of fore wing as above, edge of distal black more distinctly rounded, subapical yellow spots larger and forming a band from costa to vein 4, or the spot in 4 small. Hind wing with inner marginal black reduced between veins 2 and 4 and not always extended as an edging to the red submarginal line. The black border reaching middle of cellule 3 as in type form, but in many specimens this is reduced in cellule 2.

♀. Upper side of fore wing with narrower black area than in type form. Hind wing with marginal black a little narrower than in type

form and with the same tendency to increased black scaling at the apex. Five out of the six specimens have a yellowish tint.

Underside of fore wing with distal black as above. Discal area more or less laved with straw-yellow. Hind wing as in ♂.

Menoo River, 3,500 to 5,000 feet, November to January, a small series of ♂♂ and five ♀♀; Mount Kunupi, 6,000 feet, November, 1 ♀.

15. *Delias ligata* Jord. *weylandensis* subsp. nov.

Both *ligata* Jord. and *kummeri* Jord., occur together on the Aroa River in British N. Guinea. Typical *ligata* is also found in the Arfak region of Dutch New Guinea from whence we possess also two specimens like *kummeri* which agree with two specimens from the Weyland Mountains. We have also from here some specimens showing a break in the red submarginal band, and two specimens in which this band is only represented by some scattered red scales. It seems therefore that *kummeri* and *ligata* may be forms of one species. It is curious that the two *kummeri* specimens from the Arfak are like those from the Weyland Mountains which we include under the present subspecies. It may be that after the development of the Weyland race, this form became distributed to the Arfak already occupied by the present form.

♂. Upperside of fore wing with narrower black distal area than in the type form.

Underside of fore wing with distal black as above. Hind wing with white discal area extended into cellule 2 and to a greater extent in cellule 3 than in the type form, and as much as in *kummeri*.

♀. Upperside of fore wing mostly with narrow distal black area.

Underside of fore wing with white area extending into cellule 4.

Ab. 1. Hind wing below with red submarginal line broken on vein 4. Six ♂♂, three ♀♀.

Ab. 2. Red submarginal line very thin and without black edging. One ♂.

Ab. 3. The red submarginal line between veins 4 and 7 represented by some scattered red scales. Two ♂♂, one ♀.

Ab. 4. The red submarginal line between 4 and 7 entirely absent, = *kummeri* Jord. One ♂.

This race occurs as an aberration in the Arfak Mountains, mixed with typical *ligata*.

Menoo River, 3,500 to 5,000 feet, November to January. A series of both sexes. Mount Kunupi, 6,000 feet, December to January. A series.

16. *Delias hypomelas* Jord. *rubrostriata* subsp. nov.

This form is distinguished from *hypomelas hypomelas* Jord., and from *h. conversa* Jord., by the red streaks on the hind wing below.

♂. Upperside as in *conversa*, the black margin of the hind wing a little wider between veins 4 and 6.

Underside of fore wing as in the other forms. The black post-cellular shade more as in the type form and not reaching below vein 4. The white inner margin does not extend above the submedian except for some scattered white scales in some specimens. Hind wing with ground-colour as in the other forms. Postcellular black spot smaller than in *conversa* and more as in the type form, between vein 4 and not quite to vein 6, and more or less extending into the cell where it joins a more or less defined black cell-streak. The cell-streak forms an ovate spot in the cell, scaled with red. White marginal spots as in the other forms. Streaks of nopal red (i) on a black ground in cellules 1c, 2, 3, 4, 5, 6 and 7, those in 4 and 5 short and indistinct, the one in 7 the longer and most heavily marked. In some specimens the red streaks are reduced to some scattered red scaling, and in all worn specimens they are obsolete. It seems that these red scales are easily lost and may represent quite a recent development in comparison with the other markings.

♀. Upperside as in *conversa* but with a distinct yellow tinge on the inner margin of hind wing. Underside as in the ♂, but the white inner margin of fore wing broader as in *conversa* ♀.

Menoo River, 3,500 to 5,000 feet, November to January; Mount Kunupi, 6,000 feet, November to December—a series from both. Types from Mount Kunupi.

17. *Delias hapalina* Jord. *conspectirubra* subsp. nov.

This race approaches *tessei* J. and T. from the Wandammen Mountains, but the distal black area on the fore wing is much more extended.

♀. Upperside of fore wing with black area reaching to just before the discocellulars. Hind wing as in the other races.

Underside of fore wing with broader black than in the other races, and edge of white area only reaching vein 6. Hind wing with the black band thicker than in the type form and less wide than in *tessei*. The postdiscal part of this band not edged with red or only very slightly so, the red spot always present in 1c. The black marginal border reaching to the fold in cellule 3, narrower than in *tessei*. In a few specimens the postdiscal black line is narrower than in the type

form, bears no trace of red, and is toothed slightly on the veins distally.

♀. The upperside as in *tessei*. Hind wing with the black margin a little broader. Underside of fore wing as in *tessei*, in some specimens the white area more or less completely laved with yellow. Hind wing with long subbasal streak, half white and half yellow as in *tessei*. The discal patch more or less washed with straw-yellow. The red submarginal line mostly with a narrow and straight costal spot and more curved at vein 5. One specimen has the distal patch on the hind wing sprinkled with orange-red scaling in the cell.

Menoo River, 3,500 to 5,000 feet, November to January; Mount Kunupi, 6,000 feet, November to January. A series of both sexes, mostly found on Mount Kunupi.

18. *Delias campbelli* sp. nov.

Distinct from any known form but apparently allied to *hapalina* Jord., and distinguished by the black hind wing below.

♂. Upperside almost as in *hapalina*, the distal black on the fore wing broader apically, and with a straight edge from vein 2 to 6.

Underside of fore wing with subapical yellow spots as in *hapalina*, and distal black area as on upperside. Hind wing black. A subbasal stripe of lemon colour (iv) larger than in *hapalina*. An apico-costal triangular white patch between veins 6 and the margin, bordered heavily with red on the inner edge. A little distad of the red edging to the white patch is a thin red line from vein 6 to 1b, curved outwards to vein 5, inwards to vein 2, and downwards to 1b.

♀. Upperside of fore wing with much broader black, reaching end of cell, or with a little white powdering outside in the cell. Hind wing with broad black outer margin intermixed with white scaling and inner edge nebulous.

Underside of fore wing as above. Yellow subapical spots as in ♂. Hind wing as in ♂, but the apical white patch reduced on its lower edge, and more or less powdered with black.

Length of fore wing, ♂ 27 mm., ♀ 28 mm.

Menoo River, 3,500 to 5,000 feet, November to January. A series of both sexes. Mostly found at 4,000 feet, and rare at a higher elevation.

19. *Delias mariae* J. and T. *menoensis* subsp. nov.

Distinguished chiefly by the white area of the fore wing not being clouded over.

♂. Upperside of fore wing with snow-white basal area reaching further distad below 2 than in the type form, somewhat variable in the size of the spot in 3, and of those beyond the cell; discocellulars marked thinly. Subapical spots pale pink. In one specimen the post-discal area in cellules 3 to 5 is powdered with white. Hind wing as in the type form but mostly with a narrower margin.

Underside of fore wing with an ill-defined postdiscal band, crossed by the black veins and only reaching vein 5; it is mostly broken up into spots above vein 2 and sometimes does not reach vein 3; the proximal edge is vertical to the inner margin and is less clearly defined than the distal edge. Subapical orange spot as in the type form. Hind wing with postdiscal band more laved with light orange-yellow than in the type form, its outer edge more sinuous than crenate. The discal spot is much smaller and is either white, cream, yellow, or dusted with black; it is sometimes connected with the postdiscal band either at the upper or lower angle of cell, but rarely there is a connection at both ends, in which case a black postdiscal spot is cut off; in some cases the discal spot is reduced to a dot and in one specimen is obsolete. The stripe below the cell, present in the type form, is absent in this race.

♀. Upperside of fore wing not dusted with black. Hind wing without intranervular streaks on the black margin.

Underside as in the ♂, and showing similar variations.

Mount Kunupi, Menoo Valley, 6,000 to 8,000 feet, November to January. A series of both sexes.

20. *Delias alepa* Jord., *kunupiensis* subsp. nov.

Distinguished by its broader black margins.

♂. Upperside of fore wing with broader black margins, filling in the base of cellule 6 or sometimes a white dot here. Hind wing with a heavier black margin than in the type form.

Underside of fore wing with relative black and white areas as above. Hind wing with the red line produced farther beyond vein 5, and in some cases reaching 6, the black area produced farther beyond 6.

♀. Upperside of fore wing with black margins broader than in the ♂, more so below vein 4; one or two subapical white spots. Hind wing with much broader margins than in ♂, but less so than in *weiskei weiskei* Ribbe.

Underside of fore wing with black margin little broader than in ♂. Hind wing as in the ♂, the black area not always invading the cell.

Mount Kunupi, 6,000 feet, November to January; Menoo River, 3,500 to 8,000 feet, November to January. A small series of both sexes.

21. *Delias marguerita* sp. nov.

Quite distinct from any known form but probably allied to *alepa* Jord.

♂. Upperside almost exactly as in *alepa* Jord., the black marginal line of the hind wing being broader than in *alepa alepa* and just as in *alepa kunupiensis*.

Underside of fore wing as in *alepa alepa* except that the subapical spots are much larger in cellules 4 and 5. Hind wing with the red subbasal stripe shortened distally and the space between it and vein 8 filled in by a white stripe reaching to just before the end of vein 8. The red stripe is not of the same red tone as in *alepa*, but is nopal red (i). There is a narrower stripe of the same colour in 1c from below cell at base to the postdiscal line, and partly represented in *phippsi* by an oblong spot. Cellule 1b is filled in with pale olive-grey (1) from base to marginal line, and 1a is ecru-olive (xxx). The outer edge of the red stripe is narrowly edged with black to a variable degree, the red scales overlaying a black ground. At the distal end of the stripe this black scaling becomes broader and bends at right angles to form a postdiscal line, which is nearest the cell on vein 3 and does not generally reach vein 4. This line varies in width, becomes thinner anteriorly and in one specimen reaches vein 5, by a distal curve. The outer edge of the postdiscal band is bordered with red which continues as a thin submarginal line from vein 4 to just before vein 7, being parallel to the margin from below vein 5 to its termination. The basal area between lower edge of cell and middle of costa and discally to vein 7 is black; this area is continuous with the black scaling in 1c, and postdiscal band. Discal area of wing within postdiscal band laved with straw-yellow. A marginal black border as on the upperside.

Length of fore wing: 23 mm.

Menoo River, 4,000 feet, December to January, twelve ♂♂.

All taken at one spot within a few days.

22. *Delias phippsi* sp. nov.

Allied to *alepa* Jord., but very distinct.

♂. Upperside of fore wing with black distal area extending along costa to base, to the discocellulars, to vein 4 before its middle and obliquely to the end of 2. Hind wing with black marginal border about

3 mm. wide, from vein 6 to the inner margin, narrowing anteriorly and posteriorly.

Underside of fore wing with broader distal black. A subapical lemon-chrome spot divided by vein 8. Hind wing with a snow-white subbasal streak in 7. Below the cell in 1c an oblong spot of nopal red (1) lying in a white band spotted with bluish-grey near the cell and covered with bluish-grey scales on the other side. This band continues from the lower edge of cell as a large discal straw-yellow patch becoming broader anteriorly; its edges are clearly defined, the upper one passing beyond vein 6; the lower, straighter, and not quite reaching end of cell, the anterior end bounded by the red submarginal line. Submarginal red line placed more proximal than in *alepa* and reaching the costa; the space between it and the margin, from costa to vein 4, is snow-white. Basal edge of wing from costa to middle of inner margin powdered with yellow.

♀. Upperside with greatly extended black ground-colour. Fore wing with creamy-white area for two-thirds of inner margin, its outer edge parallel with outer margin, curved round just above vein 3 along inside of cell to base. Hind wing with white proximal half showing the colour of the underside through it, extending to end of cell, posteriorly to basal two-thirds of inner margin, anteriorly following the discal patch of the underside.

Underside of fore wing with proximal straw-yellow area of same shape and size as on upperside. A subapical line of six lemon-chrome spots only divided by veins. Hind wing as in the ♂.

Length of fore wing: ♂ ♀ 26 mm.

Menoo Valley and Mount Kunupi, 3,500 to 6,000 feet, November to January. A small series of ♂ ♂ and three ♀ ♀.

23. *Delias aruna* (Bdv.). Variation.

On the coast of Geelvink Bay at Wanggar, and twenty-two miles or so inland at Nomnagihé, the forms *aruna* and *irma* Fruh. overlap and some transitional forms were obtained by Messrs. Pratt.

1. The hind wing with red markings very large; some scattered red scales between the subbasal stripe and vein 7; fore wing with unusually large yellowish-white scaling on the inner margin, with a scattering of white scales as far as vein 2. A few specimens.

2. Typical *aruna* Bdv.—majority of specimens; also from Mount Kunupi, 6,000 feet, December to January.

3. The red band reduced proximally and distally. Wanggar, one ♂.

4. The red band further reduced, with only slight scaling at bases of cellules 3, 5, 6, and none in 4. Nomnagihé, 2,000 feet, January and February, two ♂♂.

5. The red band still further reduced proximally and posteriorly. Wanggar, February, one ♂.

6. The red band indicated by scattered scales in 1c, base of 2 and end of cell. Fore wing with white inner margin but slightly extending beyond submedian. Red subbasal spot as in *irma*. Nomnagihé, one ♂.

Three ♀♀ are to be noticed. These have the upperside as in *irma* but paler yellow and with a very pale-yellow and sharply defined cellspot.

1. Underside. Fore wing with cellspot as above and a submarginal row of seven pale yellow spots. These spots occur in some of the typical females, but in these they are white. Hind wing with the discal yellow scaling accentuated on the middle of the discocellulars, and distally indicating the outer edge of the band found in the typical form. Wanggar, February, one.

2. Fore wing with submarginal spots less well-defined than in 1. Hind wing with a discocellular yellowish-white mark and a few yellow scales surrounding it.

Wanggar River, 15 miles inland ca. 600 feet, January, one.

3. Typical *irma* except that the fore wing spot is yellowish-white and the hind wing with a slight yellow discocellular mark.

Nomnagihé, 2,000 feet, January to February, one.

The most widely distributed form is *aruna*, occurring in Central (late German) New Guinea, Dutch New Guinea, Waigeu, Roon Island and the North Moluccas. The other form, *inferna* Butl., occurs in the Snow Mountains in British New Guinea (*irma* Fruh.) and Cape York.

It may be supposed that *aruna* is the earlier form and that the later tendency was to the reduction of red, a tendency which became more definite as the range of the species increased southward. This tendency is probably seen in Roon Island specimens (*rona* Roths.), in which the red is suffused with black, and also in the specimen from Geelvink Bay which we have described.

Intergrades should also be found further south, where also at present only *aruna* is known.

Both are coast forms and their distribution is limited by the high land.

24. *Delias discus* Honr.

Berl. Ent. Zeit., xxx, p. 130, t. 5, fig. 4 (1886) (Sekar).

A series of this species from Nomnagihé presents certain differences from specimens found in the Snow Mountains. On the fore wing below, the subapical spots are mostly larger, and the median white band extends to vein 4 and is nearly constantly broader. On the hind wing the band is paler yellow, narrowed in cellule 6 where some white scaling is intermixed.

As perhaps the only constant difference is in the paler colour of the hind wing band, we hesitate to separate this form, but the tendencies to differentiation are worth noting. There are six ♂♂ from the Snow Mountains, one ♂ labelled "Brit. N. Guinea" (probably erroneous), and four ♂♂ without localities in the Joicey collection. This material is clearly not enough to decide about any constant differentiation, and more specimens may exhibit similar characteristics to those from Geelvink Bay.

25. *Delias albertisi* Honr. *albiplaga* subsp. nov.

This form is distinguished by the white instead of yellow patch on the hind wing above. Whilst in *citrona* we have a yellow representative of a western species, in *albiplaga* we have the yellow colour of a north-eastern species changing to white.

♂ ♀. Upperside of hind wing with anal patch white, rarely extending slightly into the cell or beyond vein 3, the area in 3 smaller than in the type form, and the area in 2 mostly shorter. Underside of hind wing with the black discal margin a little broader than in the type form.

Menoo Valley, 4,000 to 6,000 feet, November to January, only on Mount Kunupi. A series of both sexes.

26. *Delias niepelti* Ribbe, *arfakensis* subsp. nov.

This represents a distinct race characterized by the white area of the fore wing extending farther beyond end of cell than in *meeki* R. and J.

♂. Upperside of fore wing with narrower black apical area than in *niepelti*, but below vein 4 as broad as in this form. Hind wing as in the type form.

Underside of fore wing with yellow area extending well beyond end of cell, its edge sharply defined and slightly curved anteriorly. Sub-

apical spots a little smaller than in the type form, and with the same distal diffusion. A fine yellow marginal line from the lower spot to the submedian. This line is seen in most specimens of *niepelti*, but is absent in *meeki*. Hind wing as in *neagra* Jord., the costal patch variable but always large.

♀. Upperside of fore wing with orange filling the cell except at the angle of the discocellulars, and curving outwards to the same degree as in the type form. Hind wing as in *neagra*, the yellow colour almost filling the cell, only leaving a narrow strip of bluish-white along the lower margin.

Underside markings much as in the ♂.

Habitat.—The Arfak district of north Dutch New Guinea. A series from the Angi Lakes, 6,000 feet, January to March, 1914, A., C., and F. Pratt; also from Warmasin, 6,000 feet, March, 1910.

NEW FORMS OF PAPILIONIDAE FROM NEW GUINEA, MALAYA, AND SOUTH AMERICA.

BY J. J. JOICEY AND G. TALBOT.

1. *Papilio (Troides) chimaera* Roths. *dracaena* J. and T. ♂.

♂. Smaller in size on the whole than *chimaera*. Discal green area on fore wing more extended, and green areas on hind wing narrower.

Upperside of fore wing with more extended green in cellule 5. Discal area with outer edge nearer the margin, and extended farther below vein 2. Inner marginal stripe extended to near distal margin and curved upwards, in two specimens joining the lower angle of discal patch. Hind wing with larger yellow area. A large spot in 2 close to cell, mostly reaching base of vein 2; all post-cellular stripes a little longer, the one in 3 broader at the base. Underside of fore wing with narrower black margins and much smaller black spots.

Length of fore wing: ♂, 61 mm.

Dutch New Guinea: Weyland Mountains, Dewaro Village, 3,500 feet, June, 1920, two ♂♂, four ♀♀; Mount Kunupi, 6,000 feet, November, one ♂; Menoo River, 3,500 to 5,000 feet, December to January, two ♂♂, six ♀♀. ♂ neallotype from Dewaro. Collected by C., F., and J. Pratt.

The first were obtained on the first expedition, which was abandoned owing to difficulties with the natives, who cut down the trees haunted by this species.

Was seen daily on Mount Kunupi at 6,000 feet, but flying too high to render capture possible.

2. *Papilio polydorus* L. *alboplagatus* subsp. nov.

Allied to the typical form from the S. Moluccas.

♀. Distinguished from the Moluccan form by the much larger white areas on both wings. Fore wing with white markings more distinct, the patches below vein 3 larger and purer white, the one in 2 just filling up the base of the cellule. Hind-wing with larger discal patch, the

spots closer together, and veins separating them very thinly scaled with black. Red submarginal spots placed nearer the margin, and smaller.

Sula Islands, June, July and September, W. J. C. Frost, 2 ♀♀.

3. *Papilio ulysses dohertius* Roths. ♀.

Nov. Zool. v, p. 417 (1898) (Obi) ♂.

Fore wing markings very much as in *telegonus* Feld., but the blue in the cell reduced anteriorly and distally. Hind wing with the blue area as in *telegonus*, and with submarginal spots as in *ulysses ulysses* L., but smaller and less linear in shape.

Underside of hind wing with band of discal gray scaling narrower than in *telegonus*. Submarginal spots smaller and without blue edging except for those in 2 and 3 which have a blue-grey edging.

Obi (W. J. C. Frost), one ♀.

4. *Papilio lorquinianus* Feld. dewaro subsp. nov.

Near *albertisi* Ob., from the Arfak.

Distinguished by the broader black margin of both wings.

Distributed in Dutch New Guinea from the Wandammen Mountains southward to the Weyland Mountains, but the extreme reduction of the green areas occurs in the Weyland Mountains.

♂. Compared with *albertisi*. Upperside of both wings with reduced green areas. Fore wing discoidal streak without green distally, or with some thin scaling only; all green scaling outside cell much reduced above vein 3. Pilose stripes lengthened proximally. Hind wing with broader black margin than in *albertisi*.

Underside not distinctly different from *albertisi*. The pale border of the hind wing is broader in most specimens.

♀. More like *i. lorquinianus* than *i. albertisi*.

Upperside with blue-green much more reduced than in *albertisi* ♀. Fore wing with black entering end of cell except in one specimen. No blue at base of cellule 8, except in one specimen.

Underside of fore wing with pale distal area broader posteriorly than in *albertisi*.

Weyland Mountains, Dewaro Village, 3,500 feet, June, 1920, four ♂♂, seven ♀♀ (types); Wandammen Mountains, November, 1920, five ♂♂; 3,000 feet, November, 1914, one ♂. Collected by C., F., and J. Pratt.

The Weyland Mountains specimens have somewhat more blue than the others, especially the ♀. One ♂ has the basal area of both wings

entirely blue, with a greenish tint on the distal edge; the spots are green (type).

5. *Papilio payeni* Bdv. *ciminus* Fruh. ♀.

Larger than ♀ *payeni payeni*. Fore wing with broader brown apical area, postdiscal spots indistinct, submarginal dark band narrower; distal brown interspace between apical area and postdiscal waved line broader. Hind wing spots more sharply defined and the small spots distinct; three curved submarginal spots on veins 3—6, the larger one nearly joining a stripe which merges into the tail colour.

Underside of fore wing with postdiscal line more strongly curved and nearer the postdiscal spots. Anterior part of submarginal line half-way between postdiscal line and margin. Hind wing discal spots strongly marked with white; postdiscal line more strongly angled between the veins.

Length of fore wing: 58 mm.

S.W. Sumatra: S. Korintji Valley, 2,000 feet, October, C., F., and J. Pratt, one ♀.

6. *Papilio sarpedon monticolus* Fruh. ab. *longilinea* ab. nov.

♂. This specimen bears on the fore wing a submarginal line of bent marks, which are also distinct on the underside.

Dekawa, N. Celebes, 18, xii, 1912, one ♂.

One other race of *sarpedon*, *isander* G. and S., from the Solomons, alone possesses constantly a row of submarginal spots on the fore wing, and it is of interest to note the rare appearance of this character in one of the most widely distributed of eastern Papilios.

7. *Papilio rhesus* Bdv. *parvimacula* subsp. nov.

♂. Fore wing with a narrower discal band. The line crossing middle of cell obsolete. Hind wing with a narrower postdiscal band, the spots more separated.

Underside of hind wing with discal band a little narrower, postdiscal band narrower, and marginal black spots larger.

Sula Island, June, July and September, W. J. C. Frost, three ♂♂.

8. *Papilio androcles* Bdv. *latilinea* subsp. nov.

Distinguished by the narrower white bands and the heavier submarginal line on the fore wing.

♂. Fore wing with distal band narrower, especially in the cell.

Submarginal line broader. Hind wing with discal black band without white scaling, marginal black broader.

Sula Island, June, July and September, W. J. C. Frost. A small series.

9. *Papilio childrenae* Gray unimacula subsp. nov.

P. childrenae oedippus Roths. and Jord., Nov. Zool. xiii, p. 463 (1906) (Ecuador) ♂.

♀. Fore wing with a single rounded spot placed distally of the middle on the submedian fold. In one specimen almost halved by the black scaling near the middle; no other markings. Hind wing with two short and narrow red spots in 2 and 3, nearer the margin than to the cell; a small spot behind vein 2, and a pale anal spot.

Underside of fore wing with spot as above and a dot above it in the middle of cellule 2. Hind wing with spots paler, the two anal ones joined to form a red line.

♂. Fore wing with cell stripe reduced to a narrow green stripe on the lower edge. Hind wing with much shorter red stripe, the lower edge removed farther from the margin and the inner edge but slightly extending behind vein 2.

Underside without any markings on the fore wing. Hind wing spots much reduced, no spot behind 2, and only a few scattered red scales in the anal area.

Balzapamba, N.W. Ecuador, two ♀ ♀ specimens, also two ♂ ♂ from the Grose-Smith coll., labelled "Ecuador." In the Brit. Mus. one ♂ from Ecuador (Hew. coll.).

10. *Papilio cutorina* Stgr. f. *dilutus* f. nov.

It is at present uncertain whether we have here a local race or an individual aberration.

♂. Fore wing patch sharply limited by vein 2, inner edge incurved between 2 and the submedian more so than in typical specimens. Hind wing with spots shorter, the outer one pale pink, also the anterior outer edge of the larger spot. The specimen is smaller than usual for this species, and is somewhat worn.

Length of fore wing : 39 mm.

Ecuador, without precise locality (probably Balzapamba) one ♂.

11. *Papilio trapeza* R. and J. *concoloratus* subsp. nov.

We have a female of this species from Balzapamba, N.W. Ecuador, and associate with it a male which differs from the typical form, both

sexes being without any patch on the fore wing. This ♂ is noted by Rothschild and Jordan in their revision of the South American *Papilio*, Nov. Zool. xiii, p. 670.

A "female" of this species was described by Niepelt in *Lep. Niepeltiana* 1, p. 53, pl. xii, fig. 1 (1913) from Zarayaquilio, E. Ecuador. This specimen is in the Joicey collection and is a ♂, the differences in markings and shape of wing noted by Niepelt being only slight variations which occur in other males. The shape of the wing is as in other males, and the exposed anal aperture discloses a ♂ structure. The much swollen abdomen evidently led Niepelt to consider it a female.

♂. Fore wing without any markings. Hind wing with three red spots and the vestige of a fourth.

Underside of fore wing without markings. Hind wing with four red spots and the vestige of a fifth. No white submarginal marks.

♀. Fore wing without markings, well rounded; anterior two-thirds semi-transparent. Hind wing with five large red spots, the one in 3 being larger than the others, and the one in 5 smaller and farther removed.

Underside as above, the spots paler.

"Ecuador" (ex coll. Grose-Smith) one ♂; Balzapamba, N.W. Ecuador, one ♀.

12. *Papilio cacicus inca* R. and J. ♀ f. *peruviana* f. nov.

This is the representative in Peru of the form *zaddachi* Dew.

The red band of the fore wing is interrupted in cellule 5. Stripes in 2 and 3 long, reaching the cell; stripe below vein 2 long, not reaching the cell; spot in 6 short and not touching cell. Postdiscal yellowish spots only lunate below vein 5, above this they form somewhat oblong ill-defined spots.

Underside of fore wing with a small red constricted spot in 5, other spots and stripes larger than above. Postdiscal line separating the discal patch from two well-developed submarginal red spots in 1b and 2, a lunate red mark in 3. Hind wing with postdiscal darker band broader than in the Colombia form, postdiscal line without any blue edging and less strongly scalloped.

La Merced, Central Peru, one ♀.

NEW FORMS OF BUTTERFLIES FROM DUTCH NEW GUINEA.

BY J. J. JOICEY AND G. TALBOT.

The forms herein described were collected by Messrs. C., F., and J. Pratt, and details of the localities are given in the paper on *Delias*.

NYMPHALIDAE.

1. *Mynes halli* sp. nov.

Dedicated to Mr. A. Hall, a student of *Nymphalidae*, who, in his travels, has discovered several novelties.

Allied to *websteri* Smith, and distinguished by its smaller size, much reduced pale area on the fore wing and very narrow stripes on both wings below. Found together with typical *websteri*.

♂. Upper side of fore wing with basal area more greenish than in *websteri*, not reaching end of cell nor beyond vein 3, outer edge slightly incurved to submedian. Hind wing with two metallic coppery gold apical spots in 5 and 6. Dark costal area as in *websteri*, but extended distad in cellule 5. The edge of the greyish-green area more clearly defined than in *websteri* and produced on the veins, and with a narrower bluish-green edging. The narrow black distal margin is traversed along its middle by a thin bluish-green line which thickens posteriorly. Tail longer than in *websteri*.

Underside of fore wing with yellow patch at tornus as in *websteri*. Six white lines from the costa: the more proximal one ending at base of vein 2; the second slightly broken at base of vein 3 and irregular to inner margin; third narrower, beyond the cell, and joined below 2 to the fourth, which is slightly curved; fifth commencing at vein 8, above which are two short streaks, and ending in the yellow patch in cellule 2; the sixth submarginal, thickening posteriorly, and joining the yellow patch on vein 2. Inner margin white to the proximal edge of the yellow patch. Hind wing with the stripes thinner than on the fore wing. A costal line distally curved to vein 7; a short line in cell at base; a stripe from inner margin to base of 2, continued as a thin line along vein 4

nearly to the dark outer border; a subanal line from just above end of first submedian to beyond vein 3, broken at vein 2; veins 5 and 6 scaled with white to near distal border. Apical golden spots as above. Distal margin black in cellules 4, 5 and 6, bearing in 5 some bluish-green scales, in 4 a similarly-coloured spot, and in 3 a similar and smaller spot nearer the margin. The marginal area of 1c and 2 with two large golden patches divided by vein 2, bearing each a black spot at their proximal ends and with a black line at distal end, broken in the lower patch. Inner margin edged with a white line from the submedian line to end of second submedian (1b) where it is joined to a thicker white line which forms a cup-shaped extension of the ground-colour with a spot at the inner end on vein 1b; this latter line is continued indistinctly along the distal border from vein 2 to the costa, being curved outwards in 3 and again on 7. A submarginal white line from vein 7 to vein 4, parallel to the margin; a greyish-green submarginal line from 4 to 3 where it joins the edge of the golden patch.

♀. Similar to the ♂. Upperside of fore wing with pale area extended beyond cell and to vein 4, the part above vein 4 and in end of cell being grey-green, also the edge from middle of cellule 2 to the margin. Hind wing with a black distal spot in 3 and sometimes a smaller one in 4.

Underside as in the ♂, stripes a little broader.

Length of fore wing: ♂, 27 mm.; ♀, 31 mm.

Menoo River, 3,500 to 5,000 feet, November to January, six ♂♂, three ♀♀; Mount Kunupi, 6,000 feet, November and December, two ♀♀. Rare at 6,000 feet. Also one ♂ from Ougarra, British New Guinea (A. S. Meek).

AMATHUSIIDAE.

2. *Morphopsis phippsi* sp. nov.

Distinct from any known species of the genus, and remarkable for the markings of the ♀ being white.

♂. Upperside of fore wing chestnut-brown in the basal half merging into the black-brown of the distal half. A postdiscal irregular band of ochraceous-orange (xv) from costa to tornus; the costal spot lying near the base of cellule 6 and divided by vein 10; the next spot more distal in 5; the next much longer distally in 4, its upper two-thirds incurved, with a small pale yellow-orange spot at its upper outer corner; next in 3 and narrow, its outer edge almost level with spot in 4, its inner edge incurved; spot in 2 narrower, constricted at the

middle, and more distal; spot below vein 2 close to margin and curved to a point on the submedian fold. A round subapical spot of pale yellow-orange in cellule 6, and sometimes a dot beyond it on 7. Inner margin strongly lobed and forming a wide angle with the outer margin at vein 2. Hind wing chestnut-brown merging into black-brown at the distal margin. A narrow marginal border of ochraceous-orange. A small ocellus in 2, slightly encroaching on veins 2 and 3, pupil black ringed with paler brown than the ground-colour and bearing a curved mark of bluish-white scales. Costal area paler with an area of grey scaling between vein 5 and the middle of cellule 7, the pale area extending slightly into cell and base of cellule 4. Costal edge strongly convex at middle and slightly incurved before the apex.

Underside fuscous, shading into black-brown, and with paler markings of hair-brown (xlv). Fore wing with band and subapical spot as above, pale yellow-orange (iii). A subapical black ocellus in cellule 5, its thin ring crossed by vein 6 and extending into cellule 4, ovate in shape but flattened on the outside where the edge is pale yellow-brown, the remainder being suffused with black-brown; the ocellus bears a curved mark of bluish-white scales. A pale marginal line, and a much thinner pale submarginal line, both commencing on the costa before the apex and running into the band posteriorly. A pale straight line cutting the cell at right angles to costa at vein 2, and proximally diffused. The submedian area paler hair-brown, inner margin darker. Hind wing with marginal border of pale yellow-orange. Two large ocelli with black pupils bearing some bluish-white scales; each ringed with two thin brown lines, and an outer much thicker brown line; costal ocellus reaching middle of cellule 4, its outer ring broken by the costa; median ocellus distally placed, its outer ring not touching vein 4 and reaching the middle of cellule 1c. In the cell two pale curved lines forming a somewhat kidney-shaped spot; a discal pale thick line from the costa to vein 1b, bordering the middle and lower discocellulars, then bent inwards to vein 2 and curving to the submedian area. Cellules 1a and 1b hair-brown. An irregular submarginal pale line from the costa on the outer ring of the ocellus to vein 1b, and touching outer ring of the lower ocellus in middle of cellules 1c and 2.

♀. Upperside bone-brown (xl) distally darker. Markings as in the ♂, but the bands a little wider, white with a faint yellow tinge.

Underside with bands as above, ground-colour a little paler than in the ♂. Fore wing ocellus more rounded. Hind wing exactly as in the ♂.

Length of fore wing: ♂, 44 mm.; ♀, 46 mm. Inner margin: (base to end of vein 2) ♂, 33 mm.; ♀, 37 mm.

Menoo River, 3,500 to 5,000 feet, December to January, three ♂♂ one ♀; November to December, one ♀; 5,000 feet, June, two ♀♀; Mount Kunupi, 3,500 to 5,000 feet, November to December, one ♂.

3. *Morphotaenaris schönbergi* Honr. *weylandensis* subsp. nov.

This forms a transition from *S. schönbergi* to *S. kenricki* Beth.-Bkr.

♂ ♀. Upperside of fore wing with the band more oblique on the upper edge in the ♂ than in *kenricki*, and reaching below the base of cell. The upper edge of cell, sometimes the basal angle, and costa black, rest of cell chestnut, and the band outside the cell kaiser-brown (xiv). Hind wing with black marginal border as in *S. schönbergi*.

Underside of fore wing with the band kaiser-brown and black reduced in the cell. No ocelli. Hind wing with apical and anal ocellus, rarely a minute one in 4, one ♀ with three additional ocelli in 3, 4 and 5. No yellowish scaling except at extreme base. Marginal black border as above.

Mount Kunupi, 4,000 to 6,000 feet, November to January; Menoo River, 3,500 to 5,000 feet, November to January, a series of both sexes. The ♂♂ were less common than the ♀♀.

SATYRIDAE.

4. *Hypocysta osyris* Bdv. *pellucida* subsp. nov.

Distinguished by the cream-coloured bands below, and the similarly coloured band of the hind wing above.

♂. Upperside with fuscous-black ground colour. Fore wing with a transverse band of a dirty yellow colour, formed by the cream-coloured band below showing through an area sparsely covered with fuscous scales. This band fades out above vein 5, outer edge clearly defined and parallel to margin, inner edge slightly entering cell, and lower edge reaching submedian. Hind wing with cream-coloured area shaped much as in *aroa*, with sharply defined edge and occupying an area as in *aroa serapis* Fruh., lower part more deeply incurved. Ocellus larger than in *osyris*, and its ring dusted with black.

Underside of fore wing with the band cream-coloured, broader than in *osyris*, and with a border of whitish hair more pronounced anteriorly and reaching vein 6. Hind wing with cream-coloured area as above but anteriorly broader. Apical ocellus as in *osyris*. Anal ocellus larger than in *osyris* and with a broader silvery ring. The

inner ring of both ocelli pale-ochreous. A submarginal silvery line and an antimarginal brown line as in *osyris*.

Kwatizore, South Geelvink Bay, February, three ♂♂; Wanggar River, 15 miles from coast, ca. 600 feet, January, one ♂.

5. *Hypocysta tenuisquamosa* sp. nov.

Distinct from any other in the genus, almost forming another group. The eyes are hairy. The hind wing with vein 6 given off at a distance from 7 about equal to the distance between 4 and 5; upper discocellular more oblique, lower discocellular at right angles to middle d.c.

♂ ♀. Upperside of fore wing with margins narrowly scaled with fuscous, submedian area thinly scaled with fuscous, rest of wing covered with minute hairs, with a sparse sprinkling of scales. The wing shows a green and purple iridescence in certain lights. Hind wing pattern somewhat as in *aroa* Beth.-Bkr. The white area does not reach the base, upper edge crossing cell, ill-defined, outer edge in line with discocellulars and shaded with fuscous scaling, lower edge from vein 5 to inner margin, incurved and sharply defined. A well-marked black ocellus in cellule 2 near margin, having a white centre dot and a faint brownish ring.

Underside of fore wing as above. Hind wing with white area sharply defined, anteriorly with a curved spur to the costa before apex, outer edge incurved to vein 5, then rounded to middle of cellule 3, with lower edge nearly straight to inner margin. A large apical ocellus, black with white centre dot, a smaller white distal dot and yellow-brown ring. A smaller ocellus in cellule 2, black with white centre dot, a thin yellow-brown ring edged with black, and an outer ring of metallic silvery-blue extending into cellules 1c and 3. A thick antimarginal silvery-blue line from above the apical ocellus to the second submedian.

Head, thorax, abdomen and appendages marked as in other forms of *Hypocysta*.

Length of fore wing: ♂, 21 mm., ♀, 23 mm.

Dewaro Village, 3,500 feet, June, six ♂♂, two ♀♀; Wai Sai River, 1,000 feet, June to July, two ♂♂, two ♀♀.

6. *Platypthima dispar* sp. nov.

Allied to *euptychioides* J. and T. from the Wandammen Mountains, and easily distinguished by the large ocellus in cellule 3 of the hind wing below. *P. euptychioides* occurred together with *dispar*.

♂ ♀. Upperside without markings as in *euptychioides*.

Underside with ground colour fuscous-black. Fore wing a little paler on distal and costal margins, more so on the inner margin, inner edge of pale distal area parallel with the margin. A dark submarginal line nearly parallel to margin, and a well-marked antemarginal line reaching vein 2. Hind wing with a band of five ocelli bordered with bluish silvery-white, this edging being wider on the distal side than in *euptychioides*. Anterior ocelli in 5 and 6 equal in size, the one in 4 smaller than the others, the one in 3 larger than the others, the one in 2 larger than the first 3. All ocelli with black pupil and white centre dot, a yellow-brown iris, and a broader edging of paler yellow-brown which joins up the series. The silvery border with a proximal border of reddish-brown entering end of cell, and marked in cellules 1c and 2 with some bluish silvery-white scaling. A white dot in 7 placed well proximal of the first ocellus.

Length of fore wing: ♂ ♀, 21 mm.

Mount Kunupi, 6,000 feet, December to January, two ♂ ♂ ; Dewaro Village, 3,500 feet, June, four ♂ ♂ , one ♀ (types).

7. *Pieridopsis virgo* R. and J.

Form *obscurata* f. nov.

This corresponds to the ♀ specimen described by Roths. and Jord. Nov. Zool. xii, p. 458, 1905. We have both sexes of this form. Some specimens are quite without yellow markings on the hind wings below. In two specimens the hind wing above has a heavier dark margin, wider between veins 2 and 4.

Form *opaca* f. nov.

♂ ♀. Upperside as in *virgo*. Hind wing with heavy black marginal border, wider between veins 2 and 4.

Underside of fore wing as in *virgo*. Hind wing with bands obscured posteriorly by a fuscous-black shade, leaving the anterior halves or less of each band, with band of ocelli as in *obscurata*, and edged with a narrower border of white along each side.

Form *infuscata* f. nov.

♂. Upperside of fore wing with white area not entering cell, but forming a broad stripe on the inner margin, reaching slightly above vein 2.

Underside of fore wing with inner marginal stripe not reaching vein 2. Costal bar and distal stripe alone remaining of the white area in *virgo*. Hind wing as in *virgo*.

The series of this species obtained by Messrs. Pratt is very interesting, and is constituted as follows:—

P. virgo virgo R. and J.

Mount Kunupi, 6,000 feet, November to January, sixteen ♂♂, fifteen ♀♀.

P. virgo f. obscurata J. and T.

Mount Kunupi, 6,000 feet, November to January, eleven ♂♂, seven ♀♀.

P. virgo f. opaca J. and T.

Mount Kunupi, 6,000 feet, November to January, six ♂♂.

P. virgo f. infuscata J. and T.

Mount Kunupi, 6,000 feet, November to January, two ♂♂; Mount Goliath, S. Dutch New Guinea, 5,000 to 7,000 feet, February, 1911, A. S. Meek, one ♂.

There seems little doubt that we have here a single species, which may not even be racially distinct in British and Dutch New Guinea. These are essentially mountain insects, and in course of time, it is conceivable that one or other of the forms mentioned may supplant the others and constitute a separate race.

ERYCINIDAE.

8. *Dicallaneura longifascia* sp. nov.

Allied to *ckeikei* Beth.-Bkr., from the Owen Stanley range, agreeing with this species in the white areas of both wings, and in the long white stripe on the hind wing below.

♀. Upperside fuscous-black (xlvi). Fore wing with a broad white band anteriorly narrow in cellules 6, 9 and 10, outer edge curving outwards from vein 6 to near the margin on veins 2 and 3, and ending on the inner margin before the tornus; inner edge of this band less sharply defined, straight from base of vein 11 across the middle of discocellulars to below base of vein 2, thence curved outward to the submedian, and slightly incurved to the margin. Fringe white from apex to middle of cellule 4.

Hind wing with a distal costal white patch, sharply defined, inner edge oblique from costa to middle of cellule 4, thence slightly oblique to vein 4 near its middle; outer edge from just before the apex to vein 4, slightly indented. A round white spot in 3 placed at about a third the length of the cellule from the margin. Fringe white from vein 6 to submedian (?); wings of the specimen torn from anal angle to vein 3.

Underside fuscous-black, basal area more fuscous. Fore wing with white band as above. A curved white mark crossing the cell at the middle. A white spot at extreme base. A small white spot in cellule 9, a short streak below it in 8, and a smaller spot below this in 6, all placed just beyond outer edge of band. A curved row of submarginal white spots in cellules 2 to 8, the one in 6 the larger, the one in 2 linear, close to edge of band. Two white apical spots in 6 and 7, the lower the larger. Hind wing with a white costal patch and round spot in 3 as above. A smaller white spot in 2. A thick white longitudinal stripe from the base, its upper edge oblique to base of vein 2 and along this vein shortly, lower edge just below cell, meeting upper edge in a point on vein 2; some further white scaling along veins 2 and 3 and edge of cell to vein 3; discocellulars thinly outlined with white. A curved white submedian stripe from the inner margin at base nearly to vein 2, its edges irregular, more so the lower edge. A second slightly curved and narrow white stripe, placed near the margin from the anal angle to vein 2. A narrow marginal ochraceous-tawny (xv) band from vein 5 to the anal angle, crossed by a white line broken up into spots at the veins, this again edged by a deep black line similarly broken up. The fringe broken by fuscous-black at end of veins 4 and 5, the rest of the margin being damaged in this specimen.

Head, thorax, and base of abdomen above fuscous. Antennae black. Eye edged with white except above. Palpi and side of frons white. Fore-legs with femora white, rest pale ochreous; other legs absent in this specimen. Pectus white. Abdomen pale ochreous on ventral surface, and with a subventral ochreous-tawny stripe.

Length of fore wing : 23 mm.

Nomnagihé, 2,000 feet, January to February, one ♀.

9. *Praetaxila poultoni* sp. nov.

Allied to *eromena* Jord., from the Snow Mountains, and differing in the much restricted orange area in the ♂ and in the larger white patch on the hind wing of ♀.

♂. Upperside with black-brown ground-colour and orange bands. Fore wing with a discal band from 4 to 5 mm. wide, sharply defined at the edges, not touching costa, slightly entering end of cell, crossing base of cellule 3 or not reaching it, outer edge curved from vein 3 to submedian, where the band is narrower than at costa. At base of wing some chestnut-brown scaling. Hind wing with a broad discal band, inner edge diffused below the cell and not entering the cell; outer

edge sharply defined and curved slightly outwards; anteriorly the band reaches the middle of cellule 4, and posteriorly the inner margin where it is most yellow in colour.

Underside fuscous-black. Fore wing fuscous in the apical and distal area. Band as above but sea-shell pink (xiv). Two white dots at apex in cellules 6 and 7. Hind wing band sea-shell pink, anteriorly limited by vein 4, edges sharply defined; distal and posterior part of band with orange spots on the veins, a streak on the submedian, and along the inner margin. Two white apical dots in 4 and 5. A submarginal row of five white dots, two in 1c and others in 2, 3 and 4.

Head fuscous-black; a white line round the eye, broken above; a white dot at base of antenna, on the inside; palpi orange; antenna black. Thorax chestnut-brown above, black beneath. Legs fuscous-black above, except fore legs, which have the femur and tibia orange. Abdomen chestnut above and laterally, orange-yellow ventrally.

♀. Upperside with fuscous-black ground-colour, and white bands. Fore wing with band broader than in the ♂, entering lower angle of cell and not reaching the submedian, its edges sharply defined but irregular, the part below vein 2 with inner edge more distal than in the other. Hind wing with broader band than in the ♂, somewhat as in *eromena*, but entering cell to beyond vein 2, and anteriorly narrowing to beyond vein 5, with either a spot reaching vein 6, or some white scaling in cellule 5; a slight yellow tinge on the outer edge of the band in cellule 1b.

Underside with ground-colour as in ♂. Fore wing band a little broader. Two white dots in 4 and 5, just within the pale distal shade, a white dot in 6 near the margin. Hind wing band as above; white dots as in the ♂ but larger, and another white dot in 3 joined to the edge of the band.

Fore legs with femur and tibia slightly tinged with yellow-brown. Abdomen fuscous, ventral surface white tinged with yellow.

Length of fore wing: ♂, 25 mm.; ♀, 28 mm.

Wanggar River, 15 miles from coast, ca. 600 feet, January to February, five ♂♂, seven ♀♀; Nomnagihé, 2,000 feet, January to February, four ♂♂, six ♀♀.

P. poultoni was found flying with the Agaristid *Immetalia saturata longipalpis* Kirsch. This species has a white-banded ♂ and an orange-banded ♀.

A note on this mimetic association is contributed by Professor Poulton to the present volume.

The ♀ of *P. poultoni* was found feeding on tree gum.

10. *Practaxila tyrannus* Sm. *segestes* Jord. ♀.

Abisara segestes Jord., Nov. Zool. xi, p. 45 (1904) (Dutch New Guinea, probably East of Geelvink Bay).

♀. Upperside of fore wing with cellspot reduced to a dot or obsolete. Median spot mostly reaching below vein 2. Hind wing as in *t. tyrannus* Sm., with or without two apical spots in 4 and 5.

Underside as in *t. tyrannus*, but without any yellowish or tawny scaling. The discoidal spot of the fore wing is prolonged distad in two out of four specimens.

Wanggar River, 15 miles from coast, ca. 600 feet, January, seven ♂♂, one ♀ (neallotype); Wanggar, February, one ♀; Kwatigore, February, three ♂♂; Nomnagihé, 2,000 feet, June, one ♀.

This race is separated by Fruhstorfer in Seitz, but is very close to the typical Waigeu form and may have to sink if material from Waigeu should prove otherwise.

NEW FORMS OF THE GENUS CHARAXES (NYMPHALIDAE) FROM AFRICA AND MALAYA.

By J. J. JOICEY AND G. TALBOT.

1. *Charaxes latona* Btl. *aruanus* Btl. ♂.

Till Mr. W. J. C. Frost began to make collections on the Aru Islands for the Hill Museum, this race was only known by the ♀ type.

♂. Upperside rather different from other forms of *latona*, and recalling *harmodius* Feld. Fore wing with much narrower black margin than in *latona papuensis* Btl., broader above vein 6, and reaching vein 2, its inner edge scalloped, and near it on the brown area a faint dark line marked in 5 and 6 by heavier scaling. Below vein 2 a rounded black submarginal spot divided by a line of ground-colour at the fold. A small postdiscal spot in 6, and a smaller one below it in 5. Hind wing without the black margin of *latona* forms, but with a series of submarginal spots. A large spot in 7 reaching the margin, an elongate spot in 6, a smaller ovate spot in 5, and two smaller ones in 3 and 2; two black anal dots marked with bluish-white.

Underside similar to *papuensis*, and except for the less strongly marked postdiscal scalloped lines on both wings, there is perhaps no constant difference.

Length of fore wing: 38 mm.

Aru Islands, March to May, 1916, W. J. C. Frost, three ♂♂.

We are doubtful whether one is correct in assigning *aruanus* to *latona*. We have two similar-looking forms, one from the Saddleberg in late German N. Guinea, and the other from the Hydrographer Mountains in British N. Guinea. Together with *aruanus* these have several characters not found in *latona*. It may be that we are dealing with representatives of *harmodius* or other western species.

2. *Charaxes polyxena* Cram. *baliensis* subsp. nov.

Allied to *polyxena varenius* Fruh. from Bawean.

♂. Fore wing with much broader distal black than in the Javan *baya* Moore, extended proximally in 5 and 6 to the upper angle of cell. The brown area reaches vein 5 with a short stripe in 4, absent in

varenius. Outer edge of brown area more even than in *baya* or *varenius*. Hind wing with a black submarginal band as in *varenius*, but nearer the margin and without white dots.

Underside of hind wing with outer edge of dark postdiscal band not scalloped.

Bali, 2,000—4,000 feet, March, W. Doherty, one ♂.

Received from the collection of H. J. Elwes, Esq.

3. *Charaxes elwesi* sp. nov.

This is represented by a single ♀ specimen which had remained for many years in the collection of H. J. Elwes, Esq. It appears to be allied to *nitebis* Hew., but is quite distinct.

♀. Upperside with black-brown ground-colour. Fore wing with brownish-white basal area and spots. Basal area to inner marginal two-thirds, filling base of 2, not quite reaching end of cell and limited by upper edge of cell. Costa pale brown from base to end of second subcostal. Postdiscal spots: two near bases of cellules 5 and 6, a third in 4 more distal, a fourth in 2 curved, a fifth in 2 elbowed and more proximal, the last curved from vein 2 to the basal area above the submedian; these spots separated by the veins and better defined on the inner edge, the lower three occupying a similar position to those in *nitebis*. Three subcostal spots, the smaller near base of cellule 7, a much larger one in 6, directed distad, the third smaller in 5. A row of seven submarginal spots placed somewhat as in *nitebis*, but sharply defined, the upper three rounded, the next three somewhat pointed proximally, the lower one rounded on the inside. Apex of fore wing more produced than in *nitebis*. Hind wing with a long spatulate tail. Proximal two-thirds greyish-white over a yellow-brown ground-colour; outer edge of this area sharply defined, outwardly curved at the middle. Distal area black-brown with a pale narrower marginal border, broader between veins 3 and 2 and including the tail, deeply incurved in cellule 3. A submarginal row of six white spots in 2—7 placed midway between the margin and edge of proximal area. The anal angle of both wings is torn out, but there is an indication of a black round spot bearing two small white spots.

Underside with yellow-brown ground-colour scaled with grey-white. Markings as above. Fore wing with three curved blackish basal lines, broken at the lower edge of cell. Hind wing with a pale proximal area browner than above and traversed by blackish lines. Two irregular subbasal lines fairly close together and an irregular discal line beyond

the cell, formed of curved marks divided by the veins, and distally curved at the middle. A postdiscal line of curved marks nearly straight from vein 7 to submedian fold, followed by a heavy dark line, the interspace forming pale spots. White submarginal spots as above.

The specimen is worn so much that the more obscure markings and true colour cannot be diagnosed.

Length of fore wing: 46 mm.

Sumbawa, September, 1891, one ♀. Collected by W. Doherty.

NOTE ON SYNONYMY.

4. *Charaxes brevicaudatus* Schultze.

Arch. Naturges. 79 Bd., Abt. A, p. 3, t. 1, fig. 3 (1914) (Nyasaland) ♀.

Rebel, Ann. K.K. Nat. Hofmus., Bd. xxviii, p. 254, pl. xx, figs. 21, 22 (1914) (N.W. Tanganyika, Iringa and Nyasaland) ♂.

Charaxes maudei Joicey and Talbot, P. Z. S., 1917, p. 271 (1918) ("German E. Africa") ♀.

We have acquired a ♂ of this form from Tanganyika territory which agrees with the figure given by Rebel. It is undoubtedly the ♂ of the ♀ described by us as *maudei*, the figure given by Schultze only differing in being a little darker. The tails of our ♀ specimen are long.

We prefer to treat this form as distinct from *cithaeron* Feld., which occurs in the same area, and since both sexes are constantly different it is probably another species allied to *xiphares* Cram.

5. *Charaxes penrici* Roths. ♀.

Nov. Zool. vii, p. 460 (1900) (Quebe River, Angola) ♂.

C. peculiaris, Lathy, Entomol. xxxix, p. 125 (1906) (North-East Rhodesia).

♀. Bands with reduced blue, on the fore wing with but slight blue edging or none. Band broader on the hind wing and posteriorly broader on the fore wing.

Underside paler with extended white markings.

Length of fore wing: 47 mm.

Nyasaland (♀ neallotype), also one other ♀ from Mrowi, Nyasaland, and ♂♂ from Nyasaland, East Africa and Katanga.

The form described by Lathy is not constant, as transitions occur from blue to green, and variations of the other markings.

6. *Charaxes penrici* Roths. f. *dealbata* f. nov.

This curious form may be treated as an individual aberration, unless future material may show it to be confined to an area where the typical form is absent.

♂. Fore wing with the band narrower below vein 2 and without white scaling in this part; spot in 2 with reduced white scaling. Hind wing with the band half as wide and without white, blue as in *etesipe* Godt., and not reaching the cell. A small white spot in 7 proximally of the blue spot but separated from it. The spots of the band are more sharply defined on the inner edge than on the outer.

Underside of fore wing with postdiscal patches below 2 and in cellule 2 smaller, edged with chestnut on the outside and more heavily with black on the inside. Hind wing as in the typical form, but the postdiscal chestnut band slightly more strongly marked.

Kibokolo do Zombo, Portuguese Congo, two ♂♂.

In Tring Museum, one ♂ from Pungo Ndongo, Angola.

7. *Charaxes druceanus* Btl. *proximans* subsp. nov.

Specimens from West and South Africa are typical. Specimens from Rhodesia, Nyasaland, South Congo, and northwards, are distinguished by a narrower black distal border on the fore wing, more noticeably above vein 4. The black margin of the hind wing is mostly a little narrower. The silver band on the fore wing below is broader. On the hind wing the postdiscal silvery line is less strongly curved.

♀. Distal black margin much narrower, discal bands deeper ochreous.

Nyasaland (type ♂), also in the Joicey collection from the Katanga, North Rhodesia, and Uganda (type ♀). One ♂ from Toro approaches the West African form. Also from Angola, Fwambo, and Mashonaland in the British Museum.

8. *Charaxes porthos*. Sm. *dummeri* subsp. nov.

♂. Fore wing with the blue band placed farther from the margin and inclined to be narrower. Hind wing with discal band a little narrower, spot in base of 3 very small, those in 5 and 6 smaller than in the type form, the one in 7 larger.

Underside not constantly different from the typical form.

Uganda: Maberia Forest, 4,000 feet, R. A. Dummer, thirteen ♂♂.

NEW FORMS OF BUTTERFLIES FROM AFRICA.

BY J. J. JOICEY AND G. TALBOT.

PIERIDAE.

1. *Mylothris canescens* sp. nov.

Perhaps allied to *nubila* Mosch., but distinguished by large marginal spots and grey dusting over the cell.

♂. Upperside of fore wing with broad fuscous apical area joined to three marginal spots, merged at the margin and pointed on the veins; spot on vein 2 smaller, and a small spot at end of submedian. Costa narrowly fuscous. Cell bluish-grey and interspaces between the cell and apical area dusted with this colour, also to a less extent in cellule 2, and below the cell. Hind wing with six rounded marginal spots all separate.

Underside of fore wing slightly dusted with fuscous. Marginal spots on submedian, 2, 3, and 4 separate and rounded, those on veins 5, 6, and at apex joined together. Upper edge of cell at base orange-yellow. Hind wing with marginal spots as above. Cellule 8 orange-yellow.

Length of fore wing: 28 mm.

Osa-Lowa Watershed, Eastern Congo, August, 1921, T. A. Barns, one ♂.

2. *Pieris brassicoides* Luc. *meridionalis* subsp. nov.

♂. Fore wing with broader black margin. Underside of fore wing with spots a little larger, the one below vein 2, produced more distad. Hind wing with veins more heavily black. Costa with yellow edging reaching spots before the apex. No spot in 3.

♀. Fore wing with broader margin, a broad white apical stripe in 6, a narrower one in 7, a shorter one in 5, clouded stripes in 3 and 4.

Underside with apex of fore wing and the hind wing with only slight yellowish tinge. Hind wing with spot in 6 obsolete.

Highlands of the Great Craters, Arusha district, Tanganyika territory, 7,500 to 8,800 feet, February to March, T. A. Barns, ten ♂ ♂, two ♀ ♀.

This species was hitherto known only from Abyssinia.

ACRAEIDAE.

3. *Acraea asboloplintha* Karsch f. *rubescens* Trim., ♀ f. *albula* f. nov.

The ♀ neallotype of *asboloplintha*, described by Suffert (Iris, p. 19, pl. 2, f. 6, 1904) is in the Joicey collection. It represents the ♂ type of colouring and belongs to the *rubescens* form. Dr. Eltringham, in his monograph of *Acraea* (T. E. S., 1912, p. 197) treats *rubescens* as a subspecies.

The material obtained by Mr. Barns from the Kivu district contains examples of both forms from the same place. There is also a ♀ of the *rubescens* type. This specimen is not so heavily scaled with red on the fore wing as in Suffert's ♀ from Nairobi, but it has the colour ochreous and the stripes reach the distal margin. There are ochreous stripes in cellules 3 to 6, those in 3 and 4 being only well-defined distally as spots, the one in 6 heavily marked. The distal area of the hind wing is rosy-red with a pale-ochreous marginal border. This specimen may be regarded as transitional to the specimen described by Suffert. Mr. Barns marked a specimen of typical *asboloplintha* as being the ♂ of this ♀. It is unfortunate that he did not specify whether or no these were taken "in cop."

There is a ♂ specimen with slight red scaling in 1b, base of 2, and extending a little into the cell, being thus transitional.

We are inclined to regard *rubescens* as an individual aberration.

The ♀ with white markings deserves a name, and for this we propose *albula*. The type will be the ♀ described by Trimen in the Hope Department, Oxford.

4. *Acraea eltringhami* J. and T., ♀.

Bull. Hill Mus. 1, p. 47, pl. x, fig. 11 (1921) (Kivu) ♂.

Only differs from the ♂ in its larger size and much duller colouring. Length of fore wing: 29 mm.

Rugege Forest, 8,000 feet, December, one ♀, also two ♂♂. Collected by T. A. Barns.

5. *Acraea hamata* sp. nov.

At first sight this interesting species may be said to be mimetic of *insignis* Dist., and to be allied to the *orestia* group. However, the black unspotted abdomen, showing some slight lateral reddish scaling, places it with *eltringhami* J. and T. We venture to suggest that it is derived from *eltringhami* in the same locality, and whilst it may never

be found again, we may also consider the possibility of a mutation sufficiently fixed to reproduce its kind.

♀. Fore wing as in *eltringhami*, more thinly scaled, basal costal stripe longer, a small spot in base of 3, and spot in 2 larger. Hind wing with basal black and discal black spot as in the allied form, but discal spot joined to the black area. The costa and a broad distal margin are hyaline, thinly scaled with black as the fore wing.

Underside of hind wing with separate large black spots and grey-green basal scaling. A spot at the base of 7, one in cell produced basad, one below the cell at base, a large discoidal patch lying mostly outside the cell, a small spot in base of 3 joined to the previous patch, larger spots in 2, 1c and 1b, separated by the veins.

Length of fore wing: 20 mm.

Rugege Forest, 8,000 feet, December, one ♀. Collected by T. A. Barns.

NYMPHALIDAE.

6. *Euphaedra christyi* Shpe. *barnsi* subsp. nov.

The discovery of this form induces us to regard *christyi* as a species and not as an aberration of *zaddachi* Dew., as Aurivillius considered. Typical *zaddachi* was obtained at the same place as *barnsi*.

E. christyi is distinguished from *zaddachi* by the ochre-yellow area of the hind wing, which is smaller than the red area in *zaddachi*, but in the ♀ is partly red. The inner margin is grey or black. The hind wing below has the costal area red in the ♂, only in the ♀ with extended red, and with this the pale areas of ground-colour are larger than in ♀ *zaddachi*. There is a black discoidal spot, always absent in *zaddachi*.

♂. Upperside of fore wing with markings white or with a yellowish tinge. Subapical band shorter and more curved than in the type form, not reaching below vein 4. Cellspot absent. Median band shorter, not produced to the base of cellule 2, and with a smaller spot behind vein 2. Hind wing discal patch smaller than in the type form, and reduced distally.

Underside of fore wing with bands as above, and other markings as in type form. Hind wing with red costal area, reaching vein 6 and with a large distal spot in cellule 6, and another below it in 5 (absent in one specimen). Five postdiscal black spots in 2—6, and a spot in 7 more proximal. Submarginal spots as in type form.

Upper Iowa Valley, W. of Masisi, W. Kivu region, 4,500—5,000

feet, September, 1921, T. A. Barns, three ♂♂. Taken feeding on rotting fruit in company of other *Euphaedras*, including one *zaddachi*.

SATYRIDAE.

7. *Ypthima albida* Btl. *uniformis* Bartel. ♀.

Nov. Zool. xii, p. 134 (1905) ("Cent. Africa," Congo).

Similar to the type form but not so strongly irrorated with dark grey except at the margins. A second specimen, which we place as the ♀ neallotype, has much less dark grey irroration on the costa and the distal margin. Underside as in the ♂.

Length of fore wing: 23 mm.

Lowa Valley, three days above Walikale, North-west Kivu, 4,800 feet, September, one ♀ (neallotype), also one ♂.

Rugege Forest, 8,000 feet, December, one ♀ (darker specimen). Lowa Valley, east of Walikale, September, three ♂♂; Upper Lowa Valley, near Walikale, 2,760 feet, September, 1 ♂. Collected by T. A. Barns.

8. *Aphysoneura pigmentaria* Krsch. *scapulifascia* subsp. nov.

This is the darkest form as yet known, and is more allied to the race *latilimba* Le Cerf, from Nyasaland.

♂. Upperside with reduced pale area formed of an oblong cellspot joining a round distal patch limited by the submedian. Inner edge of this area straight, separating a basal area of ground-colour bearing a pale spot at upper edge of cell, and with lower edge of cell and submedian white. Outer edge of the pale area not reaching vein 3 anteriorly and limited by this vein outside the cell, curved to the submedian fold and inwards to the submedian vein. Submarginal spot in 3 obsolete. Inner margin fuscous-black. Hind wing with dark costal area invading the basal three-fourths of cell, and also forming a basal stripe in 1c separated by the pale edge of cell.

Underside of fore wing with pale area as above, costal spot smaller than in other forms. Hind wing with anterior part of postdiscal line, from costa to vein 4, thicker and less curved, and above 7 forming the edge of a white costal spot; this spot is clouded and shorter in other forms. Interspaces between ocelli and submarginal line white from vein 3 to 6.

Palpi pale-yellow, with only a slight mixture of black hair.

Kisaba, Bugoie Forest, W. Kivu, 8,500 feet, November, 1921, one ♂. Taken on bamboo by T. A. Barns.

NEW FORMS OF THE GENUS TELLERVO (DANAIDAE).

BY J. J. JOICEY AND G. TALBOT.

1. *Tellervo assarica* Cram. *aruensis*. subsp. nov.

♂. Fore wing spots smaller, spot in 3 oblong with almost straight edges, cellspot triangular and equilateral. Hind wing with rounded white area narrower proximally, edges slightly sinuous.

Underside with submarginal spots reduced to dots. Fore wing with basal streak represented by a small spot before 2. Hind wing without a middle costal spot. Upper edge of white area with a slight tooth of ground-colour as in *assarica*, proximal edge only reaching vein 1a; a spot on the inner margin near base not touching the edge of the white area. No submarginal dot in 1b and 1c.

Aru Islands, March to May, W. J. C. Frost, one ♂.

A long series of *zoilus nais* Guér. was also obtained.

2. *Tellervo assarica* Cram. *mysolensis*. subsp. nov.

♂. Much resembling *assarica* but with well-marked basal streak on fore wing. Cellspot a little larger than in *assarica*. Spots smaller, inner edge of lower spot more distal than in *assarica*. Hind wing with band reduced between veins 2 and 4, and only slightly indented along the edge.

Underside of hind wing with costal spots larger and closer together.

♀. Fore wing postdiscal spots not connected at vein 4 as in most *assarica* forms, and their edges not so sharply defined. Cellspot large, also a well-marked basal stripe.

Mysol, 100 to 500 feet, October and November, wet season, W. J. C. Frost, four ♂♂, four ♀♀.

3. *Tellervo assarica* Cram. *waigeuensis*. subsp. nov.

T. zoilus fallax Früh. Seitz, Macrolep. ix, p. 273, pl. 78e (1911).

This is not the true *fallax* Stgr., typical specimens of which we possess from Waigeu, and also a very similar and perhaps identical form

from Mysol. The present form is closely related to the Mysol one already described. It is evident that *fallax* represents a fourth species of the genus. It is represented on the Solomons by *hieroglyphica* G. and S. The specimen from Matabello, referred to by Staudinger (Exot. Tag. p. 53) is evidently the female of *fallax*, and the females of the Mysol series are of this kind.

♂. Larger than *mysolensis*. Fore wing with larger spots, the one in 3 broader and straight on the outer edge. Hind wing with band as broad as in *assarica*, but the edge slightly irregular and only noticeably indented near the base of cellule six.

♀. Subapical spots smaller than in *assarica*, cellspot larger. Hind wing with band more rounded and not dentate.

Waigeu, February to March, A., C., and F. Pratt, one ♂, two ♀♀.

A similar form occurs on the Island of Mioswaar in Geelvink Bay, but as this may be identical with one of the races inadequately described in Seitz, we cannot venture to give it a name.

4. *Tellervo zoilus* Fbr. *parvipuncta* subsp. nov.

This form is close to *mysoriensis* Stgr., from the Schouten Islands, but may be distinguished by the smaller spots of the underside, especially of the hind wing, and by the band of the hind wing having a costal invagination of ground-colour which rarely reaches vein 4.

Together with this species was found *assarica meforicus* Fruh. This is very similar in marking, but the fore wing has a larger cellspot, always a basal streak though sometimes faint, the hind wing with band more indented on the outside and a small spot in 1b. On the underside there is no spot at the base of 1c. Fruhstorfer figures this form in Seitz, Macrolep. ix, pl. 78e, but the figure is of the ♀ and not of a ♂ as stated.

♂♀. Upperside of fore wing with a small, narrow, and slightly curved cellspot, in one specimen triangular, and in the ♀ larger. Subapical spot and distal spot as in *mysoriensis*, but a trifle shortened, and very lightly dusted with black in the ♂. A white subcostal dot, larger in the ♀. Hind wing band as in *mysoriensis*, no spot in 1b, only some light dusting. The band not divided by the ground-colour, which forms a costal invagination as in *meforicus* and only reaches vein 4 in one ♂ and one ♀.

Underside with spots smaller than in *mysoriensis*; hind wing with much smaller middle costal spot. A round dot at base of 1c, more or less defined; this dot is absent in *assarica* forms.

Mefor Island, August, C. F., and J. Pratt.

A series of both sexes, 43 p.c. ♂♂, 57 p.c. ♀♀.

5. *Tellervo jurriaansei* sp. nov.

This is a very distinct mountain form. It replaces a *zoilus* form which occurs up to 3,500 feet, and was found only between 5,000 and 6,000 feet. The only species known with a cream-coloured or almost yellowish band on the hind wing.

It is interesting to note that near the coast of Geelvink Bay both *zoilus nedusia* Hbn., and *assarica wollastoni* Roths., were found together.

The form we are describing is probably a recent development from *zoilus*, marking its limit of altitude.

♂. Upperside with the usual black ground-colour. Fore wing with spots smaller than in *nedusia*. No patch of modified scales. The spot in 3 round and placed more distal than in *nedusia*. Hind wing with the band cream-colour and distally much shorter than in *nedusia*.

Underside of fore wing thinly scaled. A submarginal row of eight pale cream-coloured spots, larger than in *nedusia*, those in 3 and 7 smaller than the others. No cell-stripe. Hind wing with band as above, and pale cream-coloured spots. A basal spot, a costal stripe in 7 where there are two spots in the allied form, submarginal spots as in other forms but larger than in *nedusia*, and the one at the costa before the apex, elongated.

♀. Like the ♂ except that the spots of the fore wing are not dusted with black.

Length of fore wing: ♂ 21 mm., ♀ 22 mm.

Menoo River, 5,000 feet, November to January; Mt. Kunupi, 6,000 feet, November to January, a series of both sexes.

NEW FORMS OF BUTTERFLIES FROM THE SULA IS., AND THE ISLANDS OF OBI, ARU, AND TENIMBER.

BY J. J. JOICEY AND G. TALBOT.

PIERIDAE.

1. *Elodina aruensis* sp. nov.

We cannot assign this form to any known species at present, but it must certainly be a race of one of the similar New Guinea or Moluccan species. It much resembles *namatia* Fruh., from Waigeu.

♂. Upperside chalky-white. Fore wing with black-brown distal area as in *namatia*, but only reaching vein 2; inner edge as in *namatia*, but the tooth on vein 4 is less produced, the edge between 4 and 6 being more oblique. Basal dark area narrower than in *namatia*.

Underside of fore wing with smaller dark subapical band, not reaching vein 3, and fading out on the costa. Basal yellow suffusion as in *namatia*. Hind wing with basal half of costa pale yellow, more marked than in *namatia*.

Length of fore wing: 24 mm.

Aru Islands, March to May, W. J. C. Frost, two ♂♂.

2. *Elodina egnatia* Godt. *tenimberensis* subsp. nov.

Close to the race *angulipennis* Luc. from Australia.

♂. Fore wing with the marginal brown reaching nearer the tornus than in *angulipennis*. The tooth on vein 4 is much less pronounced, but is sharply angled, and the edge of the apical area is more oblique from vein 3 to costa.

Underside of fore wing with larger and paler brown subapical patch, somewhat quadrate and with a narrow prolongation to vein 3. Base with only a slight yellow suffusion. Hind wing with costa pale-yellow on basal two-thirds, no trace of postdiscal markings, and a yellowish tinge on the submedian area.

Length of fore wing: 18 mm.

Tenimber: South Yamdena, 20 miles north of Saumlakki, June, July, September, W. J. C. Frost, one ♂.

Judging from series of species of this genus and specimens of *angulipennis*, we think that Tenimber specimens will be found to be fairly constant.

3. *Appias ada* Cram. *tenimberensis* subsp. nov.

A rather distinct form with broader black margin.

♂. Fore wing with distal margin more broadly black than in other forms and reaching vein 2. Hind wing with distal margin half again as broad as in *cilla* Feld.

Underside with yellow apical spot. Hind wing with brown margin reaching end of cell and near the bases of cellules 3 and 4. Orange scaling much less than in *cilla*.

Tenimber Islands, south Yamdena, 25 miles north of Saumlakki, November to March, W. J. C. Frost, five ♂♂.

4. *Terias norbana* Fruh. *sulaensis* subsp. nov.

♂. The yellow area on the fore wing is broader, and has a shorter distal prolongation which is more deeply cleft. A yellow stripe below the cell varying from being very short and narrow to very long and broad. Hind wing with yellow anal dusting more or less marked. The edge of the yellow area is much more sharply defined.

♀. Marginal border of both wings much broader. Yellow areas dusted with black.

Sula Islands, June, July and September, eight ♂♂, one ♀, W. J. C. Frost.

Also one ♂ one ♀ collected by A. R. Wallace, ex Coll. Grose-Smith.

DANAIDAE.

5. *Euploea alecto* Butl. *zodica* Fruh. ♀.

Fore wing with small white discal spot in 3 and a smaller in 9. Vestiges of 3 subapical spots. Hind wing paler in the distal area. A postdiscal series of clouded short linear spots from 1c to 5. A series of small rounded submarginal spots from 1b to 5.

Underside of fore wing with bluish-white discal spots, one in end of cell, two larger ones in 2 and 3, three smaller in 4 to 6, and two subcostal in 9 and 10; a stripe below vein 2. Four small subapical

spots and a row of obscure antemarginal dots. Hind wing with a rounded bluish-white spot in end of cell, and seven discal spots. Post-discal white spots as above, but distinct. Submarginal white spots as above, but larger and distinct.

Obi, July and September, W. J. C. Frost, three ♀ ♀, also five ♂ ♂.

6. *Euploea sulabanda* Kirsch obiana Fruh. ♀.

Soc. Entom., p. 67 (1904) (Obi) ♂.

♀. Upperside of fore wing with five small submarginal spots in 2 to 6, the lower two the larger, also a dot in 7. Hind wing with grey-white costal margin bearing a white distal spot. Three small and obscure whitish spots in 4 to 6.

Underside of fore wing with submarginal white spots as above but more distinct. Two pairs of antemarginal white dots in 2 and 3, and a dot in 4. A discal bluish-white spot in 2. Hind wing with post-discal white spots, the one in 7 the larger, and those in 2 and 3 mere dots. A row of antemarginal white dots from 1b to 5.

Obi, July and September, W. J. C. Frost, two ♀ ♀, and also three ♂ ♂.

7. *Euploea eupator* Hew. sulaensis subsp. nov.

♂. Fore wing with cellspot broken, discal spot in 2 and 3 larger, three subapical strigae in 4 to 6, not clearly marked. Hind wing without cellspot. Discal spots shorter. A row of submarginal white dots, the anterior ones the more distinct.

Underside of fore wing with stripes in 2 and 3 larger, subapical strigae distinct, and eight small submarginal spots from 1b to 4. Hind wing with a dot in lower angle of cell, postdiscal spots longer than above, and a complete series of small submarginal spots.

Sula Islands, June, July and September, W. J. C. Frost, two ♂ ♂.

NYMPHALIDAE.

8. *Ergolis merionoides* Holl. sulaensis subsp. nov.

A much darkened form.

♂. Upperside much darker brown. Submarginal line not sharply defined, postdiscal spots indistinct. Hind wing with postdiscal spots more rounded, submarginal line nearer the postdiscal spots, and interspace in 1b, 2 and 3 not filled in with black.

Underside much darker. Hind wing with submarginal line much less waved and nearer the postdiscal band.

Sula Islands, June, July and September, W. J. C. Frost, one ♂.

9. *Cynthia erota* Fbr. *bagrada* Fruh. ♀.

Seitz, *Macrolep.* ix, p. 479 (1912) (Wetter and Timor).

Very similar to the female of *cycnia* Nicev. from Key. Smaller and paler. Fore wing with lines more narrowly black-edged and with smaller postdiscal spots. Hind wing with more narrowly black-edged postdiscal line.

Underside of hind wing with smaller pale costal patch and narrower pale border to the discal line. Fore wing as in *cycnia*.

Tenimber Is.: South Yamdena, 20 miles north of Saumlakki, November to March, W. J. C. Frost, a series of males and five ♀♀.

The male of this form is darker than in *cycnia*. The pale costal patch is not always present on the hind wing below, where also the distal violet scaling is more extended than in *cycnia*.

10. *Hypolimnas deois* Hew. *obianus* Fruh. ♀.

Both wings with much more extended white areas than in *tydea* Feld. from Batjan. Fore wing with white area reaching nearly to base of cell, and leaving a small submedian and apical area of ground-colour. Ocelli in 2 and 1b larger, black with violet-blue scaling. Hind wing with white area reaching nearly to base, ocelli larger, and distal yellow-brown reduced.

Underside of fore wing with less apical ground-colour than above. Hind wing with base black-brown between costa and cell, inner margin yellow-brown.

Obi, July to September, W. J. C. Frost, one ♀, also two ♂♂.

FOUR NEW BUTTERFLIES FROM THE ISLANDS OF MEFOR AND BIAK (NORTH DUTCH NEW GUINEA).

BY J. J. JOICEY AND G. TALBOT.

THE SPECIMENS WERE COLLECTED BY MESSRS. PRATT.

DANAIDAE.

1. *Danaida mytilene* Feld. *subnigra* subsp. nov.

This form was separated by Mr. P. I. Lathy when, some years ago, he arranged the *Danaidae* of the Joicey collection.

♂ ♀. Differs from *mytilene* in the reduced spots and more extended black stripes on the veins. Upperside of fore wing with a narrow black-brown marginal border, broader at the apex and narrowest on the distal margin, sometimes not distinctly indicated. The black-brown vein stripes run into the marginal border. The cell is dusted with black and much darkened in the upper part. The subapical band of spots is mostly reduced to dots and sometimes obsolete. The double apical spot is reduced to two dots. Hind wing with darkened costal area and mostly a basal dusting of black. Vein stripes prominent.

Underside mostly darker than in the typical form, and spots smaller.

Biak, Schouten Is., June, 1914 (A., C., and F. Pratt); a series of both sexes.

Typical *mytilene* occurs on Mefor, from which island we have a series. One female is exactly like the Biak specimens.

2. *Danaida (Tirumala) melissa* Cram. *coarctata* subsp. nov.

Allied to the New Guinea race *leucoptera*, but is smaller with the markings as large, i.e., the markings are not reduced in proportion to the smaller size.

♂ ♀. Markings as large as in *leucoptera*, submarginal spot of fore wing a little larger, subapical spots a little smaller. Hind wing with stripes in 4 and 6 nearer the postdiscal spots than in *leucoptera*. Postdiscal and submarginal spots closer together, and the two submedian streaks joined to the two posterior spots of the postdiscal series.

Length of fore wing: 37—44 mm.

Length of fore wing in *leucoptera* : 41—52 mm.

Biak, Schouten Is., June (A., C., and F. Pratt); a series of both sexes.

This form does not occur on Mefor, and typical *leucoptera* is found there.

NYMPHALIDAE.

3. *Neptis maculosa* sp. nov.

Allied to *heliopolis* Feld., from the North Moluccas, but quite distinct.

♀. Underside with full complement of white bands and spots. Fore wing with a somewhat triangular spot near end of cell, joined or not joined to a basal streak. A large spot outside end of cell, rounded on its inner edge and slightly produced outwardly. A subcostal spot, longer than broad, in 6 before the middle, and a smaller spot below it in 5 more distal. Two median spots in 2 and 3, the upper the smaller and near the cell, the lower produced distad. A short oblique stripe on the inner margin at the middle, and above it on the submedian a small spot placed more distal. A postdiscal series of 6 spots in 1b to 6, somewhat pointed at their proximal edge and slightly incurved on their distal edge, those in 3 and 4 a little more proximally placed. A submarginal line broken up into 6 spots placed nearer the postdiscal series than the margin. The postdiscal and submarginal markings are not so sharply defined as the others. Hind wing with a narrower discal band of five spots, the lower two divided by the submedian, the third at base of cellule 2, the fourth elongate across end of cell, the fifth above it in 5, sometimes a small spot in the base of cellule 3, all sharply defined. An indistinct irregular postdiscal line, more marked below. A postdiscal series of seven spots in 1b to 7, the one in 1b more proximal and the other in 6 more distal than the others. A submarginal line broken up into six spots the upper one minute.

Underside markings much as on the upper side, but enlarged. Fore wing with basal streak broad, discal spot much larger than above. A postdiscal bluish-white irregular line broken up by veins 2 to 5 into somewhat lunate marks. A clouded grey-white spot below vein 2, its lower edge curved outwards to touch the lower postdiscal spot. An antemarginal line, obsolete in cellule 3, and indicated in 6 and 7 by two white points. A short yellow stripe on costa at base.

Hind wing with costa white at base. A subbasal band curved towards costa. Discal band not broken up. An irregular bluish-white post-

discal line broken up by the veins. Postdiscal spots larger than above. An antemarginal line broken at the veins.

Abdomen pale yellow on ventral surface.

Length of fore wing: 36 mm.

Mefor Island, August, C., F., and J. Pratt, four ♀ ♀.

AMATHUSIIDAE.

4. *Morphopsis biakensis* J. and T. *angustifascia* subsp. nov.

This form was figured by Lord Rothschild in *Novitates Zoologicae* xxiii, pl. iv, figs. 3, 4 (1916). According to Rothschild, specimens from the mainland of New Guinea do not differ from Mefor ones. Herr Fruhstorfer, in the *Ent. Rund.* 34 Jahr. No. 11, p. 43, described what he considered a new race of *albertisi* Ob., under the name of *derhion*, and compared it with the Mefor form of *biakensis*! The description of this single specimen from Dutch West New Guinea is too inadequate, but as it possesses a broader band than in the Mefor one, it may be an *albertisi* race, or is it the ♀ of specimens already considered as the same as Mefor and Biak ones? We have a ♂ specimen from Mt. Kunupi (Weyland Mts.), 6,000 feet, which seems to agree with Fruhstorfer's description, the ocelli being a little smaller and the band a little broader than in *biakensis*, but it is a form of this species.

♂ ♀. Upperside of fore wing with a narrower band, more deeply incurved between veins 4 and 6. Hind wing with the submarginal line nearly regular, slightly more sinuate in the ♀.

Underside of fore wing with cellmark sharply angled. Inner edge of band indented on vein 4, and with a short spur in cellule 2. In the ♀ the lower end of band at margin separated by the distal part. Hind wing with a heavier brown discal line which is more curved anteriorly and hence farther from the ocellus, the part touching vein 3 also farther from the anal ocellus, in the ♀ more as in the type form. First submarginal line less irregular, second submarginal line nearly regular, slightly thinner at the veins, in the ♀ more sinuate.

Mefor Island, August. A series of both sexes, mostly much damaged, collected by C., F., and J. Pratt.

A NEW NEPTIS AND A LYCAENID FROM HAINAN.

COLLECTED BY C. T. BOWRING, ESQ.

BY J. J. JOICEY AND G. TALBOT.

Neptis soma Mre. *candida* subsp. nov.

Allied to the race *lutatia* Fruh. from Formosa, but with purer white markings.

♂ ♀. Fore wing with larger spots, postcellular spot longer, spot in 3 longer. Hind wing with the androconial area not reaching the discal band. Discal and postdiscal bands a little broader.

Underside fuscous, markings larger than above.

Hainan Interior, September, one ♂, two ♀♀; August, one ♀; July, two ♂♂, one ♀.

In the Hope Museum, Oxford, presented by C. T. Bowring, July, one ♀.

Tajuria travana Hew. *hainanensis* subsp. nov.

♂. Fore wing with blue reduced to a small patch on the inner margin.

Underside of fore wing with paler submedian area, and postdiscal line thinner. Hind wing with posterior pale edging to the postdiscal line more strongly developed, green scaling less developed.

♀. Hind wing without blue, one specimen with fore wing also without blue.

Underside ochraceous-yellow, postdiscal line weaker than in the ♂.

Hainan: Hoihow, October, one ♂, two ♀♀; December, two ♂♂; September, one ♀; August, one ♀; November, two ♀♀; Lianui, wet month, two ♂♂, one ♀.

NEW FORMS OF LYCAENIDAE FROM CERAM AND NEW IRELAND.

BY J. J. JOICEY AND G. TALBOT.

1. *Deudorix ceramensis* Ribbe ♀.

Iris xiii, p. 366, t. vi, fig. 3 (1900) (Ceram) ♂.

Upperside shining cerulean blue as in *maudei* J. and T. but with a narrower black costal and distal edge. The white discal spot not very distinct. Hind wing with a faintly marked submarginal line. Anal lobe orange-yellow with a round black distal spot bearing on its outer edge some metallic blue scales.

Underside with some basal fuscous suffusion, and all the bands broader than in the male.

Length of fore wing: 20 mm.

Central Ceram: Manusela, 6,000 feet, October and November, C., F., and J. Pratt, one ♀, also one ♂.

2. *Deudorix ceramensis* Ribbe *nispelti* subsp. nov.

Distinguished by the much reduced patch on the fore wing, and enlarged band below.

♂. Fore wing with the brown patch limited by vein 2 and shorter than in *ceramensis* or in *maudei* J. and T. from Biak, also only touching the submedian at the base and outer edge, a few brown scales below the submedian enclosing a streak of ground-colour. Hind wing with broader costal fuscous-brown which fills the cell, nearly the whole of cellule 6, two-thirds of 5, and forms a streak below vein 5. The base of cellules 4 and 5 and the submedian area with strongly developed fuscous-brown hair. The edge of the wing more heavily bordered with black than in the two other forms.

Underside of fore wing with a broad fuscous-brown basal bar. Postdiscal band broader and touching the darker distal border on the submedian. Distal border with a thinner pale line. Hind wing with distal and submedian bands very broad and merged together posteriorly. Inner edge of discal band nearly reaching base on the costa. A broad

fuscous-brown distal border enclosing a thin white line nearly reaching vein 4. Yellow-brown spots on the bands posteriorly are larger. Distal yellow-brown spot in 3 small, in 2 quadrate without black centre, in 1b small, and in 1c as in other forms. Anal area fuscous-brown to the point where the discal band joins the others. Some metallic-green scales in 1b and 2, between the outer and inner yellow-brown spots.

New Ireland, one ♂, received from Herr W. Niepelt.

3. *Arhopala rileyi* sp. nov.

Allied to *chamaeleona* Beth.-Bkr. from British New Guinea, also occurring on the Schouten Islands. Distinguished from this on the underside by the absence of any grey white discal suffusion, and by the presence of green scaling on the anal area.

♂. Upperside coloured as in *chamaeleona*. Hind wing with dark costal area reaching or nearly reaching vein 6.

Underside colouring and markings very much as in *chamaeleona*, the grey-white edging of all spots more sharply defined. Hind wing without any grey-white suffusion except slightly in the distal area of cellules 5 and 6. Cellspots clearly defined, the middle one larger. A well-marked oblong discoidal spot, traversed by a pale line. All spots below vein 6 sharply defined and formed as in *chamaeleona*, other spots as in this form. The two submarginal pale irregular lines further apart, and at vein 3 merged with the anal scaling. Some grey-violet scaling from above vein 3 to the inner margin, narrowly separated by the ground-colour from some metallic greenish-blue scaling which forms a curved line in cellule 2, a patch in 1c, and a short line in 1b. A white antemarginal line and a black anal spot as in *chamaeleona*.

♀. Upperside much as in *chamaeleona*. Fore wing with the blue area forming a streak above vein 4, outer edge less incurved below vein 2.

Underside as in the ♂.

Length of fore wing: ♂ ♀, 24 mm.

Central Ceram: Manusela, 3,000 feet, October and November, C., F., and J. Pratt, two ♂♂, two ♀♀.

4. *Arhopala atē* Hew. ♀.

Amblypodia ate Hewitson, Ill. Diurn. Lep. Lyc., p. 8, No. 32, pl. i. fig. 4 (1869) (Amboina), ♂.

Arhopala ate Beth.-Bkr., Trans. Zool. Soc. Lond., vol. 17, p. 29 (1903).

Only known previously from Amboina.

♀. Upperside Rood's blue (ix), lustrous. Fore wing with broad costal and outer margin fuscous-black, costally reaching the cell and vein 5, incurved on the distal area between submedian and vein 2. Hind wing with broad costal and apical area, and narrow border from vein 3 fuscous black; inner margin fuscous-black to middle of cellule 1c, basal half pale. Two curved blue submarginal marks in 1c and 2, and a small black anal spot edged with blue scales above. Fringe mixed with white from anal angle to vein 4, tail tipped with white.

Underside very like the ♂. Hind wing with the first submarginal pale line further from the discal band, and the second line not so close to the margin.

Length of fore wing: 22 mm.

Central Ceram: Manusela, 4,000 feet, January, 1920, C., F., and J. Pratt, one ♀.

NEW FORMS OF BUTTERFLIES FROM SOUTH AMERICA.

BY J. J. JOICEY AND G. TALBOT.

1. *Anaea rosae* Fassl. *caucana* subsp. nov.

♂. Fore wing with smaller subapical spots which are reduced proximally, and the bands becoming indistinct posteriorly. Fringe liver-brown (xiv) and a slight marginal dusting of this colour. Hind wing with a vestige of the bluish costal spot. Distal margin bordered with liver-brown which merges into the ground-colour.

Underside with reduced white markings, and the spot in 7 on the hind wing smaller.

Cauca Valley: Colombia, four ♂ ♂.

2. *Dasyopthalma rusina* Godt. ab. *donckieri* ab. nov.

This remarkable specimen was obtained from Monsieur H. Donckier of Paris, and no precise locality is given for this specimen.

♀. Upperside with bands vestigial, and blue areas reduced. Fore wing with vestiges of the three subapical spots. Band marked by small spot on the inner margin and vestigial to vein 3, not present above this. Blue area smaller. Hind wing with band vestigial, marked by a spot on the costa and at the anal angle. Blue area much reduced and absent from the cell.

Underside of fore wing with costal band absent. Postdiscal band fading out above vein 3 and posteriorly grey-white and diffused at the end. Black ocellus in 5 large, and traces of two others in 6 and 7. Hind wing with the ocelli black and connected by a curved black band outside the cell. This black discal band is narrowly separated from a broader black postdiscal band by grey-white, the outer band extending from veins 7 to 2, narrowing posteriorly. Some grey-white discal irroration.

Although this is probably only an individual aberration, the markings of the hind wing below are so distinctly different that we have

named the form in view of a possibility that some race may be discovered to which it may be linked.

3. *Morpho cypris* Westw. *lathyi* subsp. nov.

This represents the Peruvian form of this species, hitherto known only from Colombia.

♂. Fore wing with a row of ill-defined submarginal white spots. Hind wing with a similar row of six white spots slightly connected with a row of small marginal lunules. The postdiscal spots of the fore wing are smaller than in most Colombia specimens.

Underside with apparently no constant difference.

Rio Perene: Central Peru, August to September, one ♂.

There is a specimen of this species in the Joicey collection from Colombia, which shows on the white discal band of the hind wing a round blue spot at the point of origin of vein 5.

DESCRIPTION OF A GYNANDROMORPH OF
ARGYNNIS HYPERBIUS CASTETSI OB.

By J. J. JOICEY AND G. TALBOT.

Fore wings right side female, representing the *hyperbius* form with white subapical band. Left side mostly male with the androconia present on vein 2, whilst traces of the female element occur in the presence of a portion of the subapical band, of some of the white submarginal spots, and of some grey-blue scaling in cellules 3 and 5.

Hind wing right side female. Left side chiefly male with the female element represented by some greenish scaling in the cell, in the submedian area, and to a less extent in the distal area.

Underside of left fore wing with less trace of the female element than above.

The right fore leg is female, the left is male, but with less hair than normally.

South India: Ootacamund, May.

We possess females with subapical band as well as those with male colouring.

A NEW PAPILIO FROM BURU.

BY J. J. JOICEY AND G. TALBOT.

Papilio (Troides) prattorum sp. nov.

This is the finest discovery made by the brothers Pratt since they began collecting Lepidoptera for the Hill Museum, and is another example of their skill and perseverance in tracking down species new or little known to science.

This species is confined to the mountains of western Buru. This area represents a small part of the island and is difficult of access. It is unpopulated and the mountains are heavily covered in jungle. The geological formation is sandstone, while the eastern part of the island is chiefly limestone.

P. prattorum is remarkable for the wonderful opalescence of the hind wing, in which it resembles *magellanus* Feld. from the Philippines. Its relationship however is with *aeacus* Feld., an Indian and Chinese species, extending to Formosa and the Malay Peninsula.

♂. Shape of wing as in *aeacus* Feld. Head, thorax and abdomen black. Collar red. Ventral surface of abdomen clothed with short hair, and segments 6—8 edged anteriorly with yellow; dorsal surface with segments 6 and 7 thinly edged with yellow anteriorly.

Fore wing with grey-white vein stripes sharply defined on 2—8, reaching to near the margin, the lower ones thicker than the upper; stripes 2—5 joined in pairs at the cell margin, upper stripe edging vein 5 not joined to the next along 6, upper stripe along 6 joined to the next along 7, the two last meeting in a point at the base of cellule 7. Discocellulars edged with grey-white on the inside, this edging forming a short stripe along upper and lower edges of cell; cell fold thinly edged with grey-white on its distal fourth. At the base of cellule 2 the grey-white stripe is mixed with yellow. Fringe white, interrupted by black at the veins.

Hind wing amber-yellow as in *aeacus*, and with a marginal black area and pattern much as in that species. The black margin a little

wider and more strongly toothed than in *aeacus*, in cellule 2 reaching a third of the cellule, and in the submedian area leaving a short yellow stripe, not quite the length of the lower edge of cell from base to vein 2, placed with its greater length along vein 2. Marginal black dusting on the yellow area from vein 2 to before vein 4, as in *aeacus*, and next it in 3 a round black spot which is absent in the allied species; some slight black dusting in 5 and 6 on the lower edge of the tooth. Fringe black. The whole yellow area strongly *opalescent*.

Underside of fore wing with the stripes broader and whiter, and some greenish-yellow scaling at the base of cellule 2. Hind wing with a broader and longer stripe below the cell, its outer edge diffuse. Black margin not extended in cellule 2. Some slight black dusting in 2 and 3 at the inner part of the dark markings which show through from above. Strongly *opalescent* as above.

♀. Fore wing with vein stripes as in the ♂, but those on 2 not reaching the cell, also a narrow stripe along distal part of submedian fold, a heavy stripe on the upper distal half of the submedian, and one below it more proximal. Hind wing with an amber-yellow discal area comprising a large patch in the outer half of cell and smaller patches in the bases of 2, 3, 4, 5 and 6; with a spot above vein 7, and one below 2. These postcellular patches are slightly incurved, and the spot below 2 is incurved on both edges and joined to a grey-white spot which is separated by the submedian. Submarginal yellow markings placed at a similar distance from the margin as in *aeacus*, without any proximal vein extension and with much shortened distal vein extensions. A curved mark in 7; two much larger marks in 6 and 5, shaped somewhat like a note of interrogation; three spindle-shaped patches in 4, 3 and 2, all dusted with black.

Underside of fore wing with vein stripes broader and purer white. Hind wing as above, but lower submarginal patches not dusted with black, and lower part of submedian spot not grey-white.

Length of fore wing: ♂, 85 mm., ♀, 105 mm.

West Buru, 2,000—5,000 feet, April, 1922, C., F., and J. Pratt.

Described from one ♂ three ♀.

This species is in part allied to *rhadamanthus* from the Philippines. The ♂ has similar well-defined stripes on the fore wing, and the abdomen is deep-brown above without yellow edging to the segments. In this species however, veins 2—4 of the hind wing are much closer together, and in the ♀ the submarginal markings of the hind wing are nearer the margin.

The similarly opalescent *magellanus* is apparently nearer to *aeacus* than is *rhadamanthus*, and it seems that our new form is derived from some progenitor of *magellanus* and *aeacus*.

The opalescence of the new species is found on both sides of the hind wing, whilst in *magellanus* it is seen only on the upper surface. In *prattorum* there is a strong fluorescent greenish appearance with transient purple flashes in certain lights. In *magellanus* the opalescence is mostly purple and is less strongly marked.

NOTE ON THE MIMETIC RESEMBLANCE BETWEEN
THE ERYCINID *PRAETAXILA POULTONI* J. AND
T., AND THE AGARISTID *IMMETALIA SATU-
RATA LONGIPALPIS* KIRSCH.

BY PROFESSOR E. B. POULTON, D.Sc., M.A., F.R.S.

Hope Professor of Zoology in the University of Oxford.

WHEN Mr. Talbot brought his interesting exhibit to the Entomological Society on October 19, 1921, I assumed that the moth was the model for the butterfly (*Proc. Ent. Soc., Lond.*, 1921, p. xc). I was, however, concerned with the curious resemblance of male to female and female to male rather than the determination of the species in a Müllerian pair which had acted as the model for the other—a conclusion for which little evidence was then before me.

Now that, owing to the kindness of Mr. Talbot, I am in possession of all the known facts, I can only adhere to the same opinion—that the moth has acted as model. No other interpretation of the mimetic likeness seems possible, in view of the fact that the moth has a very wide range and the butterfly a very restricted one. In that limited area the butterfly resembles patterns which are borne by the moth in various other localities as well.

The specimens of the Agaristid in the collection from Dutch New Guinea, containing nine ♂♂ and thirteen ♀♀ of the Erycinid, were as follows:—

♂ . *f. longipalpis* Kirsch (white bands).

Wanggar, February, one.

♀ . *f. longipalpis* Kirsch (orange bands).

Wanggar River, 15 miles from coast, ca. 600 feet, January, two.
Nomnagihé, 2,000 feet, January to February, one.

♀ . *f. brujni* Qb. (white bands).

Wai Sai River, 1,000 feet, June and July, one. Wanggar River,
15 miles from coast, January, one.

The numbers are, of course, extremely small, and probably no cri-

terion of the abundance of the moth, because, as Mr. Talbot writes, "The collectors made a point of catching what they knew to be a species never seen by them before, and paid little attention to a moth which had been taken on previous expeditions."

On the facts before us we must modify the original statement that the male mimics the female, and the female the male, as follows. The male Erycinid (orange-banded) mimics one form of the female Agaristid, while the female Erycinid (white-banded) mimics the other form of female, as well as the male Agaristid. Thus, as constantly happens in mimicry, the advantage lies with the female, which has a model of its own sex as well as of the other. It must be remembered, however, that a single male of a new race of another Agaristid, *Argyrolepidia aurea* Jord., was present in the same collection, having been taken at Wanggar in February. To this specimen the male Erycinid bore an even closer resemblance than to the orange-banded females of the *Immetalia*; but until we know the female, and more about the relative abundance of the new form, it is impossible to speak confidently of its significance in this association. It is much to be desired that a long series of the two Agaristids and the Erycinid from the same locality may be available for future study.

Looking at the *Erycinidae* as a group, those of tropical America, when they enter into mimetic associations, are generally mimics, often of Ithomiine butterflies, often of moths, as pointed out by Godman and Salvin in their great monograph on the Lepidoptera of the "Biologia Centrali-Americana." I cannot recall an undoubted example of a Neotropical Erycinid acting as a model. On the other hand, among the comparatively scanty *Erycinidae* of the Old World, there is the Chinese *Stiboges nymphidia* Butl. which is almost certainly the model, and not the mimic of the Epiplemid moth, *Psychostrophia nymphidiaria* Ob.

The *Agaristidae* freely act as models, especially in Müllerian mimicry. A good example from Borneo is figured by Shelford in P.Z.S., 1902, vol. ii, pl. xxi, figs. 7, 8, where the mimic is *Eterusia obliquiaria* Walk., belonging to the specially protected *Zygaenidae* (*Chalcosiinae*). In tropical West Africa there is the well-known Nymphaline mimic *Euphaedra eusemoides* S. and K., which is known to fly with its Agaristid models, differing in habits from its nearest relatives, as recorded by Dr. S. A. Neave in *Proc. Ent. Soc. Lond.*, 1908, p. lxxx. Agaristids also enter into Müllerian groups as mimics a good example being *Xanthospiloptyx poggei* Dew., with the pattern of the much-

mimicked African Geometrid moth *Aletis*, also resembled by a butterfly, *Euphaedra ruspina* Westw., and some forms of *E. eleus* Drury.

NOTE BY G. TALBOT.

With the exception of *eromena* Jord., which occurs in the Snow Mountains, no other *Praetaxila* is known which is at all like *poultoni*. In *eromena* the sexes are similar to the sexes of *poultoni*.

The Agaristid *Immetalia saturata* Walk., ranges from Buru and the North Moluccas to New Guinea and New Ireland, whilst *Argyrolepidia* is confined to New Guinea as far as is known.

The *Immetalia* has dimorphic, trimorphic, and tetramorphic forms, sometimes occurring in the same area, and in which the white and orange bands are transposed in the same sex and between the sexes.

For full details of the distribution of the Agaristid, reference should be made to Seitz, Macrolep, xi, *Agaristidae*, by Dr. K. Jordan.

Figures of the *Praetaxila* and the two Agaristids will be published in Part III.

NOMENCLATURE AND ILLUSTRATIONS.

"Pas de bonne figure a l'appui d'une description, *pas de nom valable.*" This is the well know dictum of Monsieur Charles Oberthur. Italics ours.

Monsieur Oberthur has lately given to his readers in "Études de Lépidopterologie Comparée, fasc. xix, 2e Partie," a brief account of our new venture. He further includes a statement made by Mr. Henry J. Turner in his review of the "Bulletin" in the "Entomologist's Record," November, 1921. Mr. Turner says that we have "adopted the dictum laid down sometime ago by Monsieur Oberthur, that all descriptions should be supported by figures."

Unfortunately Monsieur Oberthur has been led, by these words of Mr. Turner's, to infer that we are supporters of his principle, and further sees our support in the manner in which we have issued the "Bulletin." To avoid any further misunderstanding we now give our own view of the matter, which we did not do in the "Bulletin."

Mr. Turner is so far correct in assuming that we have adopted the view, that all descriptions should be supported by figures, but this is not Monsieur Oberthur's rule. There must be added the very important part which we have italicised at the beginning of this note and with this we never were in agreement with our illustrious and respected colleague.

That a name should become a synonym because no figure is given of the form described is a question which does not concern Lepidopterists alone. It concerns zoologists and botanists and all those who do any systematic work in Natural History. The rule cannot be limited in its application, because all living things are capable of being drawn and figured in some way. It is easier for the specialist to write a clear and adequate description than to produce a good figure, because the cost of reproduction greatly exceeds all other costs. Most specialists are people of small means, and until there exists some institution with funds at its disposal, by which all described forms may be figured, it is too much to expect everybody to carry out such a rule. There would be a deplorable dearth of published research, and our knowledge would advance with painful slowness.

It is undoubtedly true that whenever possible a figure should be given, and the more true to life the better. If any structural details

are described as apart from patterns, these should be illustrated. But we object to the view that the position of a name in zoological literature must be governed by figure or no figure. It may easily happen that the best figure we can produce will not serve to identify the species, and if not, such a figure is unnecessary. In such cases there is mostly a close affinity to another known form, and the differences are morphological or are found in the early stages, hence drawings of legs, palpi, venation, the genitalia, &c., and of larvæ are alone of value.

Monsieur Oberthur says, "En effet, le premier "Bulletin of the Hill Museum" présente une complète figuration photographique des espèces et même des formes géographiques décrites dans ledit Bulletin." We will point out that many races, aberrations and a number of species are not figured in the "Bulletin"; some, because it was considered unnecessary where comparison was made with a closely allied form, and others because we had no room. We endeavour to figure all forms which are not closely allied to a form already described or which represent species not hitherto figured. This mode of procedure, however, has nothing to do with the formula laid down by Monsieur Oberthur. Our own formula would be:—

All descriptions of forms of life should be supported by an illustration of the forms described, or by a representation of such of its parts or early stages as will convey adequately a clear idea of the differences diagnosed in the text.

We believe that such a formula could never be made a biological necessity, nor is one implied.

We regret the necessity of these remarks, and the onus must rest on Mr. Turner.

Setting aside this little difference of opinion, let us hope that our esteemed colleague will long continue to give to the entomological world his magnificent and valuable works, adding so largely to our knowledge.

Before closing, it may not be out of place to make a suggestion apropos of this subject. Let us imagine an international institute, controlling the publication of figures of all described forms, and giving such facilities as would enable authors to obtain figures of their subjects of description. Furthermore this institute would control all records and enable authors to be kept up to date with references, and thus make systematic work easier and prevent the creation of unnecessary synonyms.

GEORGE TALBOT.

CATALOGUE ANNOTÉ DES "TYPES" ET FORMES NOUVELLES DES PAPILIOS D'AFRIQUE CONTENUS DANS LA COLLECTION DU "HILL MUSEUM."

PAR FD. LE CERF.

Préparateur au Museum de Paris.

LA série des Papilios africains appartenant au "Hill Museum" est des plus importantes et l'une des plus riches en "Types." En outre de ceux apportés par les collections : H. Grose-Smith, H. H. Druce, R. Trimen, E. B. Sharpe, Suffert, etc., elle contient un certain nombre de formes nouvelles auxquelles il m'a paru nécessaire d'attribuer des noms. Quelques-unes constituent des races géographiques—ou ? saisonnières—jusqu'alors inconnues ; d'autres sont des formes purement individuelles susceptibles de fournir des indications sur l'évolution des espèces auxquelles elles appartiennent ; certaines enfin, paraissant soumises aux lois—encore obscures—qui régissent la variation, se reproduisent semblables à elles-mêmes et ne peuvent par conséquent être confondues avec les précédentes bien que devant rentrer aussi dans la catégorie systématique des "formes individuelles." C'est le cas notamment d'un certain nombre de femelles de *Papilio dardanus* Brown. On a déjà nommé beaucoup de celles-ci, mais, d'une part, il en est qui ne peuvent trouver, parmi celles déjà existantes, de dénomination leur convenant de manière suffisamment exacte, et d'autre part il y a, à mon avis, un avantage certain à ordonner le mieux possible la taxonomie d'une espèce aussi manifestement "en période d'évolution active," et réalisant, en fait, une véritable expérience naturelle du plus haut intérêt.

Çà et là, des variations moindres et trop peu significatives pour être nommées seront signalées en passant et leurs particularités brièvement indiquées.

Dans le travail qui suit, on remarquera que les espèces sont disposées dans un ordre différent de celui établi par Aurivillius in : Seitz (1908), et généralement suivi dans les Collections. Bien que réalisant à certains égards un progrès notable sur son précédent et remarquable ouvrage ("*Rhopalocera aethiopica*," 1899), la classification du maître suédois, basée

principalement sur la forme des ailes, le dessin et la coloration, doit être modifiée. L'étude méthodique des caractères et de l'armure génitale des deux sexes—entreprise en 1912 et interrompue par la guerre—m'a en effet montré que les affinités phylogéniques réelles de groupes entiers y sont méconnues. Il est vrai que dans certains cas celles-ci sont multiples ou obscures et difficiles à plier aux rigueurs du classement linéaire, mais en général on obtient un résultat satisfaisant en combinant et subordonnant les caractères externes à ceux tirés des organes copulateurs.

Sans entrer à propos de ceux-ci dans des détails qui auront leur place ailleurs, il me semble utile de donner, dans un aperçu rapide, les grandes lignes de la classification que je propose de substituer à celle d'Aurivillius et qui a été appliquée pour la première fois au Hill Museum.

A l'exemple de Rothschild et Jordan, j'ai placé en tête le seul *Pharmacophagus* de la faune éthiopienne: *P. antenor* Dr., de Madagascar.

P. zalmoxis Hew., par lequel s'ouvre la série des *Papilio* s. str. diffère de toutes les autres espèces africaines non seulement par sa grande cellule précostale mais encore par la position de la nervure 7 des ailes inférieures qui naît au tiers de la cellule, et surtout par son armure génitale (♂) très voisine de celle de certains *Troides*.

P. rex maintenu après *P. antimachus*, doit également constituer un groupe distinct dont le caractère externe principal est d'avoir les androconies des ailes supérieures axées sur les plis internervuraux, à l'inverse de toutes les autres espèces pourvues de ce caractère sexuel secondaire.

Un même groupe réunit: *P. dardanus* et *P. phorcas*—qui s'apparente au précédent par la forme individuelle *nandina* Roths.—puis: *P. nobilis*, *P. pelodurus*, *P. hermes*, *P. hesperus* et *P. euphranor*. *P. mackinnoni* peut être considéré comme appartenant à la même coupe qu'il relie—? avec *P. leucotaenia*—à celle plus complexe, groupant, de *P. hornimanni* à *P. mangoura*, les espèces noires et vertes—ou bleues—ayant *P. nireus* comme type le plus anciennement décrit. Quoique très proche par son faciès de *P. mangoura*, *P. delalandei* semble plutôt devoir être compris dans le groupe qui, s'ouvrant avec *P. constantinus*, se continue jusqu'à *P. demodocus* par l'intermédiaire des *P. menestheus*, *morondavana*, *grose-smithi* et *erithonioides*.

C'est à la fin des *Papilio* s. str. que j'ai mis le groupe si différencié des formes purement africaines à androconies très larges, ailes inférieures des deux sexes toujours acaudes, et femelles en grande partie mimétiques des mêmes Danaïdes que celles de *P. dardanus* auxquelles elles ressemblent par convergence.

Les *Cosmodesmus* africains sont moins aisés à ordonner en série

linéaire. Un premier groupe assez naturel s'établit avec *P. endochus*, *P. morania* et *P. pylades*. Un second va des *P. latreillanus* et *fülleri* à *P. hachei*, la passant par *ucalegonides* et *ucalegon*. *P. almansor*—avec sa f. *uganda*—et *P. charcedonius* forment une petite coupe isolée entre les précédents et le groupe : *agamedes*, *adamastor*, *philonoë*. *P. tynderaeus* est une forme spécialisée se plaçant au voisinage de *P. cyrnus* par lequel s'ouvre un groupe assez homogène comprenant encore les *P. ridleyanus*, *leonidas* et *levassori*.

Enfin, vient une dernière coupe qui, malgré l'existence de types divergents (*illyris*, *kirbyi*), est la plus nette. Commenant à *P. antheus*, elle réunit toutes les espèces caudées ayant conservé le facies typique du sous-genre *Cosmodesmus*, facies se retrouvant semblable sur tous les continents.

Les progrès réalisés en systématique par l'étude des variations géographiques et individuelles rendent indispensable l'identification exacte des "Types." Celle-ci ne pouvant être assurée et répandue que par une figuration appropriée, on trouvera, reproduits photographiquement sur les planches I à V, ceux des "Types" de *Papilios* africains appartenant au Hill Museum qui n'avaient pas été figurés jusqu'ici.

C'est pour moi un agréable devoir de remercier très vivement M. J. J. Joicey et M. G. Talbot, qui ont bien voulu me confier l'étude d'un des groupes les plus intéressants des magnifiques collections du Hill Museum.

F. L. C.

1. *P. zalmoxis* Hew. ♀ (pl. 1, fig. 7).

Exot. Butterf., III, *Papilio*, t. 6, fig. 18, 1864.

Femelle—Ce sexe, non figuré jusqu'ici, est demeuré extrêmement rare dans les collections ; il n'est pas tout à fait identique au mâle et présente avec celui-ci les différences suivantes :

Fond des ailes vert grisâtre clair, lavé de jaunâtre aux supérieures, inférieures jaune ocracé pâle de la base jusqu'au milieu du disque avec la bordure noire plus large, moins nettement définie, et portant des points submarginiaux plus gros. Dessous des deux paires clair et à dessins peu tranchés. Abdomen jaune ocracé pâle, sans trace de noir à la base, en dessus.

Une ♀ : Togo.

2. *Id.*, f. *sufferti* Rüb.

Entomol. Nachricht., xxiv, p. 186, 1898.

Type (H. T.) : Un ♂, Cameroon, ex coll. Suffert.

Aurivillius ("Rhopal. aeth.", p. 462) a ramené avec raison cette variété au rang de simple synonyme de : *zalmoxis* Hew.

3. *Id.*, f. indiv. *ripponi* Rüb.

Entomol. Nachricht., xxiv, p. 186, 1898.

Type (H. T.) : Un ♂, Calabar, ex coll. Suffert.

Comme l'a noté Aurivillius, la modification de coloration sur laquelle Suffert a établi la var. *ripponi* est due à une altération et ne se rencontre pas dans la Nature ; le nom pourrait tout au plus être conservé pour désigner les spécimens pourvus de deux traits noirs longitudinaux dans l'extrémité de la cellule des ailes supérieures ; l'un dans le prolongement du trait noir de l'intervalle 5, l'autre, plus court, un peu au-dessus de l'origine de la nervure 6. Tous deux paraissent être des vestiges d'un dessin noir marquant l'emplacement des ramifications disparues de la nervure médiane. Chez la femelle, le premier de ces traits est bien développé, le second rudimentaire.

4. *P. antimachus* Drury f. indiv. *centrispila* n. f.

Caractérisée par la présence dans la tache médiane de la cellule aux ailes supérieures d'un point brun fauve de la couleur du fond. Cette variation individuelle se reproduit semblable à elle-même, mais seulement dans la région congolaise ; elle paraît manquer dans l'Uganda et au Sierra Leone. Quatre exemplaires (Ht. Congo, Kassai et Cameroon) existent au Hill Museum, et quatre (Congo français : Oubangui ; et Congo belge : Stanleyville) au Museum de Paris.

Type (H.T.) : Un ♂, Bipindi, French Cameroon, novembre, 1918, ex Brayshaw.

5. *Id.*, f. indiv. *melanescens* n. f.

Forme mélanisante avec la coloration brun fauve des ailes supérieures obscurcie au bord interne et sur le disque ; extrémité de la cellule et régions avoisinantes noirâtres. Sous la cellule il n'y a qu'une tache brune, très foncée, la seconde fait défaut ainsi que les croissants subterminaux fauves des intervalles 3 et 4, et les traits clairs subapicaux placés entre les nervures 5 et 8, de sorte qu'il n'existe que deux croissants bruns, réduits et obscurs entre 1b-3.

Type (H.T.) : Un ♂, Congo, ex. coll. Suffert.

En outre des formes ci-dessus deux exemplaires de *P. antimachus* Dr. du "Hill" sont à mentionner : l'un est un ♂ dont l'aile inférieure gauche est au moins d'un tiers plus petite que l'aile droite. L'autre (Coomassie, Friapere Forest) est remarquable par ses ailes supérieures plus allongées, plus étroites et moins aiguës à l'apex que chez les individus ordinaires, avec les parties fauves très développées à l'exception

des taches ultracellulaires réduites à deux, petites, ovalaires, et de même couleur que le fond ; la tache de l'intervalle 7-9 fait défaut.

6. *P. rex* Obt. sub-sp. *barnsi* nova (pl. I, fig. 6).

Forme de grande taille, intermédiaire pour la coloration et le développement des dessins entre *rex-rex* Obt. et *rex-mimeticus* Roths.

Taches jaunes un peu plus grandes que chez ce dernier, particulièrement les subterminales des ailes inférieures.

Ailes supérieures à base d'un brun fauve beaucoup moins foncé que chez *mimeticus* et presque aussi clair que chez *rex*. Cette couleur couvre entièrement l'aire basale, du bord dorsal à la côte ; elle se prolonge en se fondant jusqu'à la seconde tache jaune cellulaire et à la tache subterminale de l'intervalle 1b. Taches submarginales petites, exceptées celles des intervalles 1b et 4 ; tache discale de l'intervalle 3 courte et étroite. Ailes inférieures brun fauve moins vif qu'aux supérieures sur tout l'espace médian ; espace terminal un peu plus obscur. Dessous des deux paires plus clair que chez *rex* et *mimeticus* ; supérieures avec une faible trace de tache jaune dans la base de l'intervalle 1b ; coloration fauve un peu moins étendue mais prolongée sur la base de toutes les nervures—Corps gris roussâtre clair.

Envergure : 121 mm.

Type (H. T.) : Un ♂, Congo belge, Upper Lowa Valley, West of Masisi (N.O. Kivu) (4,500—5,000 ft.), Mountain forest, septembre, 1922, ex T. A. Barns.

Bien qu'elle doive se placer entre *rex* et *mimeticus*, cette race est tout à fait distincte de la forme *commixta* Auriv. qui joue, beaucoup plus à l'Est, un rôle également transitionnel mais paraît localisée à la corne N.-E. du Victoria Nyanza" (cf. : Aurivillius, in Seitz xiii, p. 12, 1908). M. Barns a noté que ce *Papilio* était rare dans la localité où il l'a capturé et qu'il volait en compagnie de nombreuses *Danaïd mercedonia* Ksch.

7. *P. dardanus* Brown f. ♀ *heimsi* Suff. (pl. I, fig. 2).

Iris, xvii, p. 90, 1904.

Type (H. T.) : Une ♀, Cameroon, ex coll. Suffert.

Sous sa forme typique, cette femelle occidentale, beaucoup plus rare qu'*hippocoön*, n'en diffère pas seulement par la réduction de la bande terminale noire des ailes inférieures mais aussi par l'extension de l'aire blanche discale des ailes supérieures qui s'étend, en se fondant, au dessus de la nervure 3 et pénètre dans la partie inférieure de la cellule. Par

contre la bande subapicale, peu étendue, a sa tache inférieure séparée petite, ovulaire.

8. *Id.*, f. ♀ *planemoides* Trimen.

Proc. Zool. Soc., p. 11, 1903.

Type (H. T.) : Une ♀, au Musée d'Oxford, ex coll. W. Hobley (1903).

C'est à tort que Trimen d'abord, Aurivillius ensuite, ont rapporté cette forme femelle à la race *merope* Cr., et le Profr. Poulton à *polytrophus* Jord. Quoique localisée à l'Est africain, *planemoides* appartient, ainsi que l'a parfaitement reconnu Eltringham, à la race typique *dardanus-dardanus* Brown, dont l'habitat s'étend notablement plus loin vers l'Est qu'on ne l'a admis jusqu'ici, et atteint les plateaux septentrionaux de faible altitude du Tanganyika Territory.

Var. ind.—Une femelle *planemoides* de l'Uganda (Entebbé, ex coll. Suffert) a la bande fauve discale des ailes supérieures obscurcie, sur le milieu du disque et l'extrémité de la cellule, par un fort semis noirâtre ne laissant distincts que le groupe des taches subapicales et le groupe discal, entre le bord interne et la nervure 3. Les ailes inférieures ont la base noire, une aire médiane jaune d'ocre clair, étroite, arrondie, dépassant peu la cellule et tous les points submarginaux fauves. En dessous le dessin fauve des ailes supérieures est plus net et la base des ailes inférieures largement lavée de brun roux.

Cet individu fait une transition assez nette entre *mixta* Auriv. et *planemoides* Trim.

9. *Id.*, f. ♀, *ceneispila nova* (pl. II, fig. 11).

C'est la reproduction dans la race typique *dardanus-dardanus* Brown du dessin caractéristique de la s.-sp. *cenea* Stoll.

Ailes supérieures à taches jaune fauve ; tache cellulaire petite ; macule subapicale divisée en deux groupes : l'un costal, composé d'une tache rectangulaire dans la base de l'intervalle 6 et de deux petites taches triangulaires entre 7 et 10 ; l'autre formé d'une seule tache ovale dans l'intervalle 4 ; entre ces deux groupes persiste un rudiment de la tache de l'intervalle 5 ; macule discale réduite à une tache ovale dans l'intervalle 2 ; des traces d'un dessin rappelant celui de la f. ♀ *mixta* Auriv., se montrent sous forme d'un semis fauve le long du bord dorsal et dans partie discale de l'intervalle 1b. Il existe une petite tache apicale et deux points submarginaux de même couleur.

Ailes inférieures fauves comme chez *niobe* Auriv.

Type (H. T.) : Une ♀, Uganda, ex B. S. Gledhill.

10. *Id.*, f. ♀ *acenides* nova (pl. II, fig. 16).

Autre variation du type *cenea* dans la sous-espèce nymotypique *dardanus-dardanus* Brown.

Ailes supérieures noir profond à taches petites, séparées, blanc pur. Tache cellulaire étroite; groupe des trois taches subapicales comme chez *ceneispila*; tache de l'intervalle 4 plus petite et plus étroite ainsi que celle de l'intervalle 2; deux points submarginiaux, pas de point apical; bord dorsal très étroitement poudré de blanc jaunâtre près de la base.

Ailes inférieures à base noire, aire médiane jaune d'ocre jusqu'au-delà de la cellule, le reste noir avec une ligne de points submarginiaux blancs, petits, un peu diffus.

Dessous semblable avec le même dessin qu'en dessus, mais l'aire jaune des ailes inférieures plus sombre et moins nette.

Type (H.T.): Une ♀, Mabira Forest (Uganda), juillet, 1920, ex R. A. Dummer.

Un second individu, de même origine, porte un léger semis blancâtre sous la tache discale de l'intervalle 2.

Id., formes individuelles.

11. f. ♀ *dionysoides* Hew. Un individu, de Warri (Nigeria), de petite taille, a les parties claires encore plus étendues et plus nettement limitées que l'individu figuré par A. Schultze (*Arch. Naturg.*, 79 A. 8, Taf. 1, fig. 2) et manque même complètement des traces de la bande transversale noire du disque.

Une femelle de: Bitje, Ja River (Cameroon), dry season, ex G. L. Bates, est intermédiaire entre *hippocoön* et *nioboides* Auriv. par ses ailes inférieures lavées de jaune sur le disque, entre la cellule et la bande terminale noire, qui est très large.

Une femelle de: Mongo Mah Lobah, ex coll. Grose-Smith, par la superposition partielle, aux ailes supérieures, du jaune sur l'aire discale blanche fait transition entre les formes ♀ *benio* Suff. et *heimsi* Suff.

Deux autres femelles (Angola, ex coll. Suffert, et: Kibokolo de Zombo, Portuguese Congo) mêlent les caractères de *niobe* Auriv. et *benio* Suff. Comme elles sont bien pareilles entre elles, peut-être constituent-elles une forme particulière à cette région de l'Ouest africain.

12. *Id.*, Subsp. *polytrophus* R. and J., f. indiv. ♂ *boosi* Suff.

Iris, xvii, p. 82, Taf. 1, fig. 2 (1904).

= ab. *punctimargo* Le Cerf, *Bull. Soc. Ent. Fr.*, p. 336 (1912).

Type (H. T.): Un ♂, Dar-es-Salam, ex coll. Suffert.

Le nom de *boosi* Suff. doit être conservé pour désigner les mâles de la race *polytrophus* R. and J., pourvus d'une rangée de points jaunes

sur la bande terminale noire des ailes supérieures. Je note, en passant, que ce caractère se retrouve d'une façon constante—quoique réduit généralement à deux points—chez les femelles andromorphes de la sous-espèce *antinorii* Obt. d'Abyssinie.

La localité indiquée par Suffert pour ce type paraît—comme pour plusieurs autres—erronée, l'individu en question étant identique sous le double rapport de la taille et du dessin à ceux de l'Escarpement (Kenya Territory).

13. *P. dardanus-cenea* Stoll, f. indiv. ♂ *discopunctatus* Suff. (pl. I, fig. 10).

Iris, xvii, p. 92, 1904.

Type (H. T.) : Un ♂, Usambara, ex coll. Suffert.

Cette forme individuelle est assez commune dans l'Est africain ; elle y donne parfois un type extrême, représenté au "Hill" par un mâle de Kibwezi (décembre, 1888, ex F. J. Jackson < coll. E. M. B. Sharpe) dont tous les dessins noirs sont très développés. Aux ailes supérieures la bande terminale forme de longues dents sur les nervures du disque ; aux inférieures la bande terminale est subrectiligne, arrivant au contact de la cellule ; l'angle des discocellulaires est aussi écaillé de noir.

14. *Id.*, f. indiv. ♂, *maculatus* Suff. (pl. I, fig. 8).

Iris, xvii, p. 91, 1904.

Type (H. T.) : Un ♂, German East Africa, ex coll. Suffert.

C'est dans la sous-espèce *cenea* Stoll l'homologue de la *f. boosi* Suffert de la sous-espèce *polytrophus* R. et J. Elle se rencontre isolément dans l'Est africain (Nairobi), la Rhodesia (Fort Jameson), et l'Uganda (Entebbé).

Un mâle étiqueté "Sierra Leone" est remarquable par la grandeur des trois premiers points submarginiaux qui ont presque les deux tiers de la surface du point subapical, lui-même très grand. Il y a sans doute lieu de faire des réserves sur l'exactitude de l'indication d'origine de ce specimen, car il présente tous les caractères des mâles de la sous-espèce *cenea* et nullement ceux de la race type *dardanus* Brown.

En outre des régions citées plus haut, les formes individuelles, *discopunctatus* Suff. et *maculatus* Suff., sont représentées dans la collection du "Hill Museum" par des specimens du Cap et du Natal. Un mâle de Pletenberg (Cape Col., 1887, ex coll. R. Trimen, Catal. MSS., p. 391, No. 13) a le point apical des ailes supérieures souligné d'un semis jaune et surmonté d'un long trait de même couleur comblant l'intervalle des nervures 8 et 9.

15. *Id.*, f. ♀ *natalica nova* (pl. II, fig. 17).

Même taille, même forme et mêmes dessins qu'*hippoconoïdes* Haase, mais avec toutes les parties claires jaune d'ocre.

Cette forme semble particulière au Natal, d'où elle existe également au Musée d'Oxford (Hope Depart.). Elle avait été placée par Trimen dans sa collection comme : "Examples leading the first form *hippocoön* to the form *trophoniassa* Westw." Trop constante pour être considérée comme une forme de transition purement accidentelle, elle paraît jouer dans l'Afrique méridionale le rôle de la forme—relativement primitive—*trimeni* dans l'Est africain.

Type (H. T.) : Une ♀, Delagoa Bay, ex Monteiro < coll. R. Trimen (Catal. MSS., p. 393, No. 37).

Paratypes : Une ♀, Delagoa Bay, Morakween (Cat., p. 393, No. 35); une ♀, Sa. Lucia Bay (Cat. p. 393, No. 39), ex coll. R. Trimen—deux ♀ ♀, Delagoa Bay, ex coll. Grose-Smith.

16. *Id.*, f. ♀ *acene* Suff. (pl. II, fig. 19).

Iris xvii, p. 92, 1904.

Type (H. T.) : Une ♀, Transvaal, ex coll. Suffert.

Ce "Type" est un exemplaire peu caractéristique car la tache discale de l'intervalle 2, aux ailes supérieures, conserve des traces de jaunâtre, traces qui manquent complètement chez les individus les mieux caractérisés.

17. *Id.*, f. ♀ *hypolimnides nova* (pl. II, fig. 13).

Ailes d'un noir plus profond que chez les autres formes de la race *cenea* Stoll, avec les taches jaune d'ocre clair, bien détachées. Supérieures à tache cellulaire petite; pas de point subapical; groupe discal supérieur composé de quatre taches seulement—celle de l'intervalle 10 manque—placées très obliquement et de dimensions régulièrement croissantes, la dernière longue, lancéolée; groupe discal inférieur réduit à la tache de l'intervalle 3; trois petits points submarginaux entre 1b et 4. Ailes inférieures semblables à celles de *cenea*.

En dessous les supérieures ont le tiers apical brun foncé, les taches un peu plus claires qu'en dessus et celles du groupe discal supérieur légèrement agrandies. Inférieures brun foncé avec les points marginaux et l'aire basale blanc ocracé, cette dernière prolongée entre les nervures 5—6.

Type (H. T.) : Une ♀, West Pondoland.

Par son coloris vif et tranché, la forme et la disposition de ses taches,

cette femelle rappelle quelque peu certaines variétés individuelles d'*Hypolimmas dubia* Pal.-Beauv.

18. *P. dardanus-cenea* Stoll f. ♀ *leighi* Poult. (pl. II, fig. 12).

Proc. Ent. Soc. Lond., 1911, p. xxxviii ; *id.*, 1906, pl. XX, fig. 1.

Forme rare de découverte récente, connue seulement par les deux exemplaires du Musée d'Oxford (Hope Department) et figurée ici d'après un individu du Pondoland occidental, du Hill Museum.

A mon avis, ce type de femelle à taches fauve orange correspond, dans la sous-espèce *cenea*, à la série des formes orientales, beaucoup plus différenciées, du type *dardanus* comprenant : *ceneispila*, *alluaudi*, *mixta* et, comme terme extrême, *planemoides*.

19. *P. dardanus-cenea* Stoll, f. indiv. ♂ *extensiflava* nova (pl. I, fig. 9).

Ailes supérieures à bande noire terminale étroite, n'atteignant pas la moitié de sa largeur habituelle au niveau de la nervure 7 : point sub-apical très grand, réuni avec le fond jaune entre les nervures 7—8 de manière à former une projection entaillant profondément la bande noire. Ailes inférieures normales.

Type (H. T.) : Un ♂, Natal, ex Leigh.

Eclos le 15 novembre 1917, d'une chrysalide formée le 8 novembre 1917, ce mâle faisait partie d'une série d'individus des deux sexes élevés *ab ovo*. La modification qu'il présente résulte d'une tendance à l'extension du fond jaune dans ce sexe et se rencontre dans la plupart des races de *P. dardanus*. La collection du "Hill Museum" contient quelques exemplaires transitionnels ; deux ♂♂ de la race *dardanus-dardanus* (Congo français, Liberia), un ♂ *dardanus-polytrophus* (Kenya Territory) et un ♂ *dardanus-meriones* (Madagascar), sont presque aussi modifiés que le "type" d'*extensiflava*.

Le Museum de Paris possède également deux ♂♂ transitionnels du Congo français, et deux autres d'Afrique orientale.

20. *P. dardanus* Brown s.-sp. *meriones* Feld.

Reise der Fregate "Novara," Lépid. I, p. 95, 1865.

Considérée comme très constante, cette race insulaire n'a fourni jusqu'ici aucune forme assez différenciée pour être désignée par un nom. Cependant de très rares cas individuels montrent que la stabilité de *meriones* est plus apparente que réelle et réside surtout dans le ralentissement imposé à son évolution par l'isolement sur un territoire relativement peu étendu. Cette évolution tend néanmoins, chez la femelle, à

se poursuivre dans le même sens que chez les races continentales, et je puis en citer ici deux exemples assez démonstratifs.

(1) Le premier est fourni par une femelle de Tananarive, appartenant à la collection du "Hill Museum" et figurée : pl. I, fig. 1, dans laquelle la tache cellulaire noire des ailes supérieures, agrandie et traversant presque la cellule en dessus, se trouve en dessous prolongée sur le disque par un semis noir formant une tache allongée dans l'intervalle 4.

(2) Le second, au Museum de Paris, est une femelle de la même région que la précédente, dépourvue de queue à l'aile inférieure droite (l'aile gauche correspondante est normale). A la place de l'appendice absent subsiste une très courte dent obtuse, analogue à celle de la ♀ "Type" *trimeni* décrite et figurée par le Prof. E. B. Poulton in : *Trans. Ent. Soc. Lond.*, p. 283, 1906, pl. XVIII, fig. 1.

Il semble que ces individus reproduisent chacun le premier degré des transformations essentielles par lesquelles s'est établi le dimorphisme sexuel si accentué des trois sous-espèces continentales de *Papilio dardanus* : la femelle du "Hill Museum" apportant le principe de la bande transversale, oblique, des ailes supérieures, dont l'existence et le développement variables ont abouti aux nombreuses formes actuellement connues ; l'autre montrant que la disparition de la queue aux ailes inférieures s'est effectuée d'un coup et non par voie de réduction progressive, comme l'orthogénèse permettait d'ailleurs de le prévoir, ainsi que l'observation de ce qui se passe dans d'autres espèces, en particulier *Papilio memnon* L.

Enfin, en réunissant leurs particularités, elles font transition, entre les femelles andromorphes et *trimeni* Poul., fournissant ainsi un argument nouveau à l'opinion du savant Professeur d'Oxford qui voit dans cette dernière le type le plus archaïque des femelles continentales acaudes.

21. *P. dardanus-meriones* Feld. f. indiv. ♂ palaeotypus nova (pl. I, fig. 3).

Ailes supérieures à bande terminale noire un peu plus étendue que dans le type ; point subapical petit. Ailes inférieures avec une très large bande terminale, couvrant à peu près les deux cinquièmes de l'aile, sinuée à son bord interne et fortement entaillée entre les nervures 5—6. Sur cette bande noire un léger semis d'écailles jaunes, forme une trainée diffuse entre 3—4 et des points submarginaux indistincts entre 4—7 ; queues entièrement noires. Dessous ne différant de la forme normale que par la teinte obscure et les dessins effacés de la moitié distale des ailes inférieures.

380 "*Types*" et *Formes Nouvelles des Papilios d'Afrique*

Type (H. T.): Un ♂, Maroansetra, Madagascar (ex coll. C. J. Grist).

A l'inverse des deux précédentes mutations, de caractère nettement néogénétique, cette forme paraît constituer un rappel atavique du type ancestral d'où sont dérivées les multiples races locales rattachées spécifiquement à *P. dardanus* Brown.

22. *P. phorcas* Cr. f. indiv. ♂ *casphor* Suff. (pl. II, fig. 15).

Iris, xvii, p. 97, 1894.

Type (H. T.): Un ♂, Tabora, ex coll. Suffert.

Deux specimens existaient dans la coll. Suffert; l'un pourvu de l'étiquette "Type" est un grand ♂ de la subsp. *congoanus* Roths.; sa localité "Tabora" semble suspecte. L'autre, pourvu de la même indication d'origine, est un très petit ♂ (envergure, 57 mm.), à queues larges et sans taches jaunâtres latéralement, paraissant se rapporter plutôt à la race du Cameroon et du Sierra Leone.

23. *P. phorcas* Cr. var. *tippelskirchi* Suff.

Iris, xvii, p. 96, Taf. 1, fig. 1, 1904.

Type (H. T.): Un ♂, Nairobi, ex coll. Suffert.

Correspond exactement à *ansorgei* Roths. (*Novit. Zool.*, III, p. 324, 1896), en synonymie duquel Aurivillius l'a justement placé.

24. *P. phorcas-phorcas* Cr.

Pap. exot., I, p. 1 (pl. 2, fig. B. C., 1775).

On doit considérer seulement comme f. ? *phorcas* les individus de ce sexe semblables au mâle, c'est-à-dire à fond noir foncé, dessins verts, et points submarginiaux absents ou réduits. Entre le type ainsi défini et la f. *thersander* F. existent au moins deux formes de transition, l'une plus proche de *phorcas*, l'autre de *thersander*, mais ne pouvant être confondues avec aucune et assez caractérisées pour être distinguées par des noms.

25. 1° f. ? *mutans nova* (pl. II, fig. 22).

Fond brun noirâtre à dessin principal pareil à celui du ♂ mais jaune d'ocre clair, parfois légèrement lavé de verdâtre; points submarginiaux très développés aux deux paires d'ailes, géminés et jaune d'ocre clair aux inférieures. Coupe des ailes plus arrondie que chez *phorcas* et semblable à celle de *thersander*.

Type (H. T.): Une ♀, Mabera Forest, Kyagive, Mulanga, Uganda (4,000 ft.), ex R. A. Dummer.

Paratypes : Deux ♀ ♀, même origine.

26. II° f. ♀ *media nova* (pl. II, fig. 14).

Dans cette seconde forme, la coupe des ailes est également arrondie, l'aire claire des deux ailes, de couleur verte ou vert jaunâtre, conserve à son bord distal le dessin anguleux et net de *phorcas* mais aux supérieures son bord proximal ne touche plus la cellule au-dessous de la nervure 3 et descend en s'écartant progressivement vers le bord dorsal. La base est ainsi largement noire.

Les ailes inférieures ont de même la base noirâtre jusqu'au voisinage des nervures 2 et 7. Points submarginiaux des deux paires gros et jaunâtres comme chez *mutans*. Le dessous participe des mêmes modifications que le dessus.

Type (H. T.) : Une ♀, Sierra Leone.

27. *P. euphranor* Trim.

Trans. Ent. Soc. Lond., p. 70, pl. V, figs. 1, 2, 1868.

La collection R. Trimen contenait neuf ♂ ♂ et deux ♀ ♀.

L'"holotype" est un ♂ étiqueté : "Tsomo River, Caffraria," et portant dans le Catalogue manuscrit de la collection Trimen le No. 4 (p. 389). La femelle "paratype" est celle qui, avec la même origine (ex J. H. Bowker) a le No. 5, p. 389 du même catalogue. Ce sont ces deux individus qui ont été figurés (loc. cit.).

Parmi les autres, un des mâles a la bande médiane jaune des ailes inférieures plus large et prolongée, comme chez les femelles, au-delà du sommet de la cellule par trois taches jaunes placées dans la base des intervalles 4-6.

28. *Id.*, s.-sp. *mor tus nova* (pl. II, fig. 18).

Diffère de la race typique par la présence aux ailes supérieures d'un gros point jaune dans l'angle inférieur de la cellule, les taches discales moins larges, disposées en ligne moins courbe et venant toucher la cellule entre les nervures 4 et 6 ; tache de l'intervalle 7 carrée, séparée du point submarginal du même intervalle et non fusionnée avec lui comme c'est le cas chez tous les specimens de la coll. Trimen.

Ailes inférieures semblables à celles du Type. Dessous présentant les mêmes caractéristiques différentielles que le dessus avec, en outre, un coloris plus tranché.

Type (H. T.) : Une ♀, Impetenyeni Forest (8,000 ft.), Alfred District, Natal, 12 decembre, 1920.

Paratypes : un ♂, une ♀, même origine, coll. Museum de Paris.

29. *P. (= Rhaphicera) pringlei* E. Sh.

Proc. Zool. Soc. Lond., p. 352, pl. 19, fig. 3, 1894.

Type (H. T.) : Un ♂, Kikuyu, 4 mai, 1892, ex coll. Bowdler Sharpe (1908). C'est un ♂ de *P. nobilis* Rogenh., conforme au type moyen de cette espèce assez variable pour le développement et l'intensité des dessins bruns du dessus et du dessous.

30. *P. pelodurus* Btlr.

Proc. Zool. Soc. Lond., 1895, p. 720, text fig. p. 721, ♂, 1896.

La série d'exemplaires appartenant au "Hill" montre qu'il existe dans cette espèce plusieurs formes individuelles et une race géographique.

31. *P. pelodurus-pelodurus* Btlr., f. indiv. *lyrus* nova, pl. III, fig. 30.

Caractérisée par la présence aux ailes supérieures d'une tache supplémentaire, verticale, plus haute que large, unissant la dernière tache jaune du groupe costal à la première du groupe discal. Le dessin forme ainsi une bande irrégulière, étranglée, mais continue.

Type (H. T.) : un ♂, Mlanje, Nyasaland.

Paratypes : Trois ♂♂, même localité.

32. *Id.*, f. indiv. *extensus* nova (pl. III, fig. 28).

Diffère de la précédente et du type par l'existence, dans l'extrémité de la cellule des ailes supérieures, d'une tache supplémentaire jaune, triangulaire, appuyée sur la discocellulaire supérieure et prolongeant directement en dedans la tache de l'intervalle 6 du groupe costal.

Type (H. T.) : Un ♂, Zomba, Nyasaland, ex coll. Suffert.

Paratypes : Quatre ♂♂, Zomba, septembre et novembre, 1920, ex H. Barlow.

Dans cette forme, la tache supplémentaire de l'intervalle 4 n'existe pas ou est rudimentaire, de même que le court trait jaune placé dans la cellule, le long du bord inférieur, vis-à-vis de la tache discale de l'intervalle 2, trait caractéristique des spécimens conformes au ♂ de Zomba, "Type" de l'espèce, figuré par Butler (loc. cit.).

En outre de ces variations légères mais bien caractérisées, on remarque quelques modifications purement individuelles ; c'est ainsi que la tache de l'intervalle 8 des ailes inférieures est plus ou moins grande ; celle de l'intervalle 3 toujours petite, devient parfois punctiforme. Les mêmes ailes portent souvent dans les intervalles 7 et 8 un semis d'écaillés jaunes, de densité variable, reliant les taches jaunes aux échancrures marginales, correspondantes ; les queues sont franchement et entièrement noires, ou teintées de roussâtre, et la tache rouge sur-

montant l'angle anal, fréquemment grande et gémée, se réduit dans certains individus à un point et peut manquer complètement.

Ce qui précède s'applique à la race "type" du Nyasaland, mais dans l'Afrique orientale (Tanganyika Territory) volé une race bien distincte qu'on a jusqu'ici confondue avec la précédente.

33. *P. pelodurus* Btlr. s.-sp. *vesper nova* (pl. III, fig. 25).

Différenciée d'une façon constante aux ailes supérieures par les taches jaunes du groupe costal (intervalles 6-10) sensiblement moins grandes, non surmontées à la côte par un semis jaune, et surtout par la tache de l'intervalle 6 toujours petite, punctiforme, complètement séparée de celle de l'intervalle 7 sous l'angle de laquelle elle se trouve placée, l'axe des taches de ce groupe se trouvant ainsi plus oblique ; il en est de même du point subapical de l'intervalle 9 qui affecte la forme d'un trait étroit ; les grandes taches discales ne remplissent pas la base des intervalles 2, 3, et 4 dans lesquels elles s'arrondissent.

Enfin les points jaunes des ailes inférieures sont plus gros notamment dans l'intervalle 3 : par contre celui de l'intervalle 8 paraît constamment absent, sauf chez la femelle. Celle-ci a, aux supérieures, la tache jaune de l'intervalle 6, minuscule, et porte des points submarginiaux entre 2-3, 5-6, et 6-7.

Type (H. T.) : Un ♂, German East Africa, ex coll. Suffert.

Paratypes : Un ♂, German East Africa, une ♀, Usambara, deux ♀ ♀, Lindi. Egalement de l'Usambara (un ♂), dans la coll. du Museum de Paris.

34. *Id.*, f. *indiv. excedens nova*.

Se distingue par la présence, dans l'intervalle 5 des ailes supérieures, d'une tache jaune additionnelle allongée.

Type (H. T.) : Un ♂, German East Africa.

Il est tout à fait remarquable que cette tache supplémentaire, dont l'apparition est commune aux trois espèces affines : *hermes*, *hesperus* et *pelodurus*, effecte dans la race *vesper* la forme en trait isolé allongé, étroit, et à axe longitudinal qu'elle montre dans *hesperus* Westw. et *hermes* Boull. et Le Cerf, et non pas l'aspect rectangulaire à axe vertical qui se rencontre exclusivement chez la race typique *pelodurus* du Nyasaland.

35. *P. hermes* Boull. et Le Cerf.

Bull. Soc. Ent. Fr., p. 142, 1912.

Cotype (Paratype) : Un ♂, Haut Cavally, Frontière de Liberia (1909), ex Museum de Paris.

36. *P. hermes* Boull. et Le Cerf, f. indiv. *pellax* Boull. et Le Cerf (pl. III, fig. 27).

Bull. Soc. Ent. Fr., p. 142, 1912.

Je crois utile de figurer ici un mâle bien caractérisé—ex Ashanti, coll. Hill Museum—de cette variation individuelle que l'on pourra comparer avec la f. *lyrus* de *P. pelodurus* Btlr.

37. *P. hesperus* Westw. f. indiv. *insolitus nova* (pl. III, fig. 23).

♂. Ailes antérieures un peu plus allongées que dans le type ; point subapical très petit ; tache discale de l'intervalle 3 fortement allongée ; taches costales réduites, principalement la première devenue minuscule.

Ailes postérieures à bande médiane large, dilatée en arc à la côte et tache de l'intervalle 2 plus longue que celle de l'intervalle 1c ; il n'existe que deux points submarginaux, très gros, entre 3—5 à gauche ; à droite un troisième, minuscule, persiste sous la nervure 7.

Dessous des deux paires brun noirâtre foncé, avec les mêmes dessins qu'en dessus, un peu sablés de noir aux supérieures, davantage aux inférieures.

Type (H.T.) : Un ♂, Luluabourg, Kassai, Congo belge.

38. *P. hesperus* Westw. f. indiv.

Un mâle de : Bipendi (French Cameroon) a tous les dessins jaunes fortement réduits et la tache de l'intervalle 6 des ailes antérieures marquée d'un point noir près du sommet.

39. *P. mackinnoni* E. Sh. f. indiv. *bimaculatus* Suff. (pl. III, fig. 29).

Iris, xvii, p. 96, 1904.

Type (H.T.) : Un ♂, Usambara hinterland, ex coll. Suffert.

40. *P. mackinnoni* E. Sh. f. ind. *unimaculatus* Suff. (pl. III, fig. 26).

Iris, xvii, p. 96, 1904.

Type (H.T.) : Un ♂, Usambara hinterland, ex coll. Suffert.

41. *P. oribazus* Bdv. f. indiv. ♂ (pl. IV, fig. 31).

Ailes supérieures avec une ligne de points bleu-vert placés obliquement dans le prolongement des deux points subapicaux entre les nervures du disque et aboutissant à l'angle de la tache de l'intervalle 2. Points submarginaux des ailes postérieures très gros, principalement ceux des intervalles 2—4 qui sont réunis en larges macules cordiformes.

Un ♂, Madagascar.

Bien qu'elle ne soit pas d'un aspect très saillant, il m'a semblé utile de faire connaître cette aberration à cause de l'intérêt que présente l'apparition, aux ailes antérieures, d'un dessin supplémentaire dont il n'existe pas d'équivalent chez aucune des espèces ou formes des *Papilios* du groupe auquel appartient *oribazus*.

42. *P. charopus* Westw. subsp. *juventus* nova (pl. IV, figs. 32, 35).

♂. Diffère du type par les caractères suivants : taille plus petite, bandes vertes des deux ailes plus larges, principalement aux inférieures où elles s'étendent très loin sur le disque. Dessous avec tous les dessins jaunâtre mat—et non lilas luisant—bande maculaire discale des supérieures plus étroite, nettement délimitée, à taches à peine divisées par les plis internervuraux.

Envergure : 75 mm.

Type (H.T.) : Un ♂, Semliki Valley, ex coll. Suffert.

Paratype : Un ♂, même origine.

43. *P. bromius* Doubl. subsp. *chrapkowskii* Suff.

Iris, xvii, p. 98, Taf. II, fig. 2, 1904.

Type (H.T.) : Un ♂, Nairobi, ex coll. Suffert.

Paratypes : Un ♂, deux ♀, même origine.

44. *P. nireus* L. f. (? indiv.) *dimidiatus* nova (pl. IV, fig. 37).

Caractérisée par la grande réduction, aux ailes supérieures, de la bande médiane verte dont les taches des intervalles 3, 2, 1c et 1b sont séparées, graduellement réduites, et disparaissent avant d'atteindre le bord dorsal. Bande des inférieures étroite, avec ses deux premières taches séparées et son bord interne très écarté de la base des nervures 2 et 7. Dessous comme chez le type.

Envergure : 75 mm.

Type (H.T.) : Un ♂, Aguapim, W. Africa, ex Shelley.

45. *P. nireus-lyaeus* Dbd. f. indiv. ♂ *aelyus* Suff.

Iris, xvii, p. 98, Taf. III, fig. 1, 1904.

Type (H.T.) : Un ♂, Mori-Mangate, ex coll. Suffert.

C'est une forme individuelle peu accusée, mais assez rare, de la subsp. *lyaeus* Dbd.

La ♀ rapportée par Suffert à *aelyus* est une ♀ de *lyaeus* mal dé-

veloppée et un peu aberrante par l'aspect diffus et l'extension vers le disque des taches bleues submarginales des ailes supérieures.

46. *P. nireus* L. subsp. *donaldsoni* E. Sh.

Proc. Zool. Soc., p. 537, 1896.

Type (H.T.) : Un ♂, Valenso, 26 octobre, 1894, Dr. D. Smith.

Paratype : Un ♂, Darro Mountains, 10 septembre, 1894, Dr. D. Smith, ex coll. E. M. Sharpe.

Le nom de *donaldsoni* peut être conservé pour désigner les exemplaires de la subsp. *pseudonireus* Feld. dépourvus de taches vertes dans l'extrémité de la cellule et l'intervalle 4 du disque, taches dont la présence est expressément indiquée par Felder dans la description originale de *pseudonireus* "Type," du Bogosland.

Les exemplaires de l'Erythrée concordent assez bien avec *donaldsoni* ; ceux du Somaliland ont en général la bande des ailes inférieures encore plus étroite et coupée de noir par les nervures, celles des supérieures presque disparue. Ils portent en outre aux mêmes ailes des points submarginaux jaunes plus ou moins mêlés de vert (Waggo, Hankidely, in coll. Hill Museum).

47. *P. epiphorbas* Bdv. f. indiv. ♀ nova nova.

Distincte de la forme typique par l'existence aux ailes supérieures d'une bande verte continue, légèrement échancrée latéralement dans l'intervalle 2 et formée par la réunion des deux groupes de taches habituels. Tous les dessins aussi nettement définis que chez le mâle.

Type (H. T.) : Une ♀, Tamatave 1907, coll. Manders.

48. *P. epiphorbas* Bdv. f. indiv. ♂ *oriphorbas* nova (pl. IV, fig. 39).

Ailes supérieures avec une bande discale verte continue de la côte au bord dorsal et seulement étranglée et un peu diffuse dans l'intervalle 2. A sa partie supérieure cette bande comprend une tache cellulaire plus grande que dans le type et, au-delà de la cellule, deux taches supplémentaires dans les intervalles 6-7 ; la dernière allongée et de même forme que celle placée au même endroit chez *P. phorbanta* L. Deux points subapicaux et une série de points submarginaux bien développés.

Bande médiane des ailes inférieures très large, la tache de l'intervalle 3 presque aussi longue que celle de l'intervalle 2. Dessous des deux paires sans différences notables.

Type (H. T.) : Un ♂, Tananarive, Madagascar.

Cette forme individuelle mêle curieusement les caractères des *P. oribazus* Bdv., *epiphorbas* Bdv., et *phorbanta* L.

49. *P. mangoura* Hew.

Ent. Mont. Mag., xi, p. 226, 1875.

Type (H. T.) : Un ♂, Madagascar, ex coll. H. Grose-Smith.

Paratype : Une ♀, même origine.

50. *P. constantinus* Wd. s.-sp. *monticolus* nova (pl. II, fig. 20, 21).

Diffère de la race typique, de Zanzibar, par les caractères suivants : taille plus petite, forme plus arrondie, fond moins foncé, noir brunâtre avec les androconies moins larges et n'atteignant par la nervure 5. Dessins jaunes plus larges particulièrement à la partie inférieure de la bande discale des ailes supérieures dont la dernière tache est allongée le long du bord dorsal et prolongée par un semis d'écailles jaunes plus ou moins dense ; aux mêmes ailes, entre la nervure 11 et la côte existe un autre semis jaune beaucoup plus long que les taches qu'il surmonte, et les doubles points submarginiaux agrandis sont en partie confluent, ceux de l'intervalle 2 formant une grosse tache arrondie.

Ailes inférieures à bande médiane large, dilatée au dessus et au dessous de l'extrémité de la cellule, et à bord distal suivi d'un semis jaune. Doubles points submarginiaux grands, allongés, plus rapprochés du milieu du disque. Dessous des deux paires moins foncé et plus uniforme ; bande discale des inférieures moins large qu'en dessus, rétrécie par une extension du dessin brun de l'extrémité de la cellule ; points submarginiaux un peu plus petits.

Type (H. T.) : Un ♂, Escarpment, B.E.A., 6,500—9,000 ft., 9 octobre, 1900, ex W. Doherty.

Paratypes : Trois ♂ ♂, même origine.

51. *P. menestheus-lormieri* Dist. s.-sp. *phalusco* Suff.

Iris, xvii, p. 103, 1894.

La f. *phalusco*, considérée à tort comme une aberration d'*ophidi-cephalus* Obt. par Aurivillius (in : Seitz) est en réalité une sous-espèce distincte, la plus méridionale de l'espèce dimorphe *menestheus* Dry. et se rapporte à la f. *lormieri* Dist.

Dans celle-ci elle représente le maximum de développement des parties jaunes sauf à la bande médiane des ailes inférieures qui demeure toujours assez étroite. Elle est particulière au Cap (Pondoland et Cafrerie) et au Natal. Dans cette dernière région apparaît aussi une forme intermédiaire, à bande des supérieures moins dilatée à l'apex et un peu incurvée, dont R. Trimen avait réuni dans sa collection une série des deux sexes avec l'indication suivante : "Examples varying in direction of the nearly allied *menestheus*." Contrairement à l'opinion ex-

primée par M. Ch. Oberthür, cette forme n'est pas *Ophidicephalus* décrite par cet auteur ("Etudes d'Entomologie," iii, p. 13, 1878) d'après un ♂ des : "Montagnes en face de Zanzibar." *Ophidicephalus* Obt. est à *menestheus* Dry. ce que *phalusco* Suff. est à *lormieri* Dist., et son habitat, plus septentrional, remonte du Zanguebar à l'Afrique orientale britannique.

52. *P. menestheus-lormieri* Dist. s.-sp. *semlikana* nova (pl. IV, fig. 33).

Caractérisée par la réduction des dessins jaunes et particulièrement de la bande médiane des ailes inférieures qui en dessus n'a pas plus de 2 à 2,5 millimètres de large et est finement coupée de noir par les nervures ; en dessous, elle est plus réduite encore et partiellement maculaire.

Type (H. T.) : Un ♂, Semliki River, ex coll. Suffert.

Paratypes : Deux ♂♂, même origine.

53. *P. morondavana* G.-Sm.

Ann. Mag. Nat. Hist. (6), viii p. 78, 1891.

Type (H.T.) : Un ♂, Mahovo, Madagascar, ex coll. H. Grose-Smith.

Paratypes : Une ♀, trois ♂♂, même origine.

54. *P. grose-smithi* Roths. f. (? an s.-sp.) *praeses* nova (pl. IV, figs. 34, 36).

Diffère de la forme type par l'extension des dessins jaunes et le ton plus vif de ceux-ci ; à la côte des ailes supérieures un long trait surmonte la tache placée entre le sommet de la cellule et la nervure 9 ; taches submarginales grandes, celle de l'intervalle 2 entière, en rectangle arqué, non entaillée. Chez le mâle, aux ailes inférieures, la tache suivant l'ocelle costal est presque entièrement rouge comme chez la femelle, mais celle-ci a en plus du rouge du côté proximal de l'ocelle.

En dessous les taches sont encore plus grandes qu'en dessus, les points submarginaux des supérieures se réunissant aux arcs marginaux pour former de grandes taches allongées ; seul, celui de l'intervalle 2 reste isolé. Aux inférieures le noir est extrêmement réduit sur le disque et dans la cellule, et les arcs submarginaux des intervalles 5—7 confluent entièrement avec ceux du bord.

Type (H.T.) : Un ♂, N.W. Madagascar, ex coll. H. Grose-Smith.

Paratype : Un ♂, même origine, "Type" ♀ (!) de *P. erithonioides* G.-Sm.

Ces specimens qui appartiennent bien à l'espèce distinguée et décrite

assez récemment par Lord Rothschild, avaient été placés par H. Grose-Smith dans sa collection comme femelles de *P. erithonioides* G.-Sm.

55. *P. erithonioides* G.-Sm.

Ann. Mag. Nat. Hist. (6), vii, p. 122, 1891.

Type (H.T.): Un ♂, N.W. Madagascar, ex coll. H. Grose-Smith.

Paratypes : Deux ♂♂, même origine.

56. *P. demodocus* Esp. f. indiv. *docusdemo* Suff.

Iris, xvii, p. 101, pl. 11, fig. 1, 1904.

Type (H. T.): Un ♂, Tabora, ex coll. Suffert.

Cette forme individuelle remarquable n'était jusqu'ici connue que par le "Type" unique ci-dessus, manifestement obtenu ex larva et tué avant d'être sec. Le Museum de Paris en reçut en 1914 deux exemplaires, également mâles, parmi de très nombreux *demodocus* normaux élevés à Madagascar de chenilles recueillies dans la ville même de Tananarive.

57. *P. demodocus* Esp. f. indiv. diverses.

Un ♂, Cameroon, Bitje Ja River, octobre, wet season, ex G. L. Bates, est remarquable par l'absence complète de semis jaune sur le disque des ailes inférieures en dessous.

Une ♀, Capetown, janvier, 1890, ex coll. R. Trimen (Cat. MSS., p. 386, No. 8) présente aux ailes supérieures des modifications qui en font une transition vers la f. indiv. *Cariei* Le Cerf. Aux ailes supérieures, les taches cellulaires sont réunies en une macule irrégulière et les taches de la bande discale aboutissent comme dans *Cariei* à la cellule, mais elles conservent dans leur centre ou près de leur base des traces diffuses du fond noir qu'elles ont entouré et en partie absorbé.

Une ♀, Capetown, Wynberg, janvier 1860, ex coll. R. Trimen, est asymétrique, les deux ailes du côté gauche montrant une réduction très accusée des dessins jaunes : aile supérieure à taches submarginales partiellement effacées et rudimentaires, bande discale extrêmement rétrécie, ses taches accolées à la cellule, triangulaires, mal définies ; taches cellulaires réunies transversalement et croissant terminal restreint à quelques écailles. Aile inférieure dépourvue de taches submarginales.

58. *P. gallienus-gallienus* Dist., ♀ sec. Suff.

Iris, xvii, p. 95, 1904.

Allotype ♀, Cameroon, Barombi station, ex coll. Suffert.

La femelle décrite par Suffert est un ♂ dépourvu d'abdomen, usé par le vol, et chez lequel les androconies ont presque entièrement disparu, à

l'exception de traces persistant près des nervures 3 à droite, 4 à gauche et bien visibles à la loupe.

59. *P. gallienus-whitnalli* Neave, f. indiv.

Un ♂, Entebbé, Uganda, ex coll. Jackson, porte sur le disque des ailes inférieures, entre les nervures 5-6 une extension linéaire de la bande jaune. Deux exemplaires semblables existent au British Museum. Cette modification légère, analogue à celle qui caractérise la f. *praecyola* Suff. de *P. cypraeofila*, est intéressante en ce qu'elle paraît être le vestige d'un dessin ancestral commun aux espèces du groupe et qui ne se retrouve plus actuellement, chez toutes, que sous forme de variation individuelle.

60. *P. cypraeofila* Btlr., f. indiv. *praecyola* Suff.

Iris, xvii, p. 94, 1904.

Type (H. T.): Un ♂, Cameroon, ex coll. Suffert.

Paratype: Une ♀, même origine.

61. *P. cypraeofila* Btlr. f. *lactifascia* nova (pl. IV, fig. 40).

Taille plus grande que celle de *cypraeofila* typique—de l'Ashanti—bande discale des deux paires et échancrures légèrement plus larges et d'un blanc pur. Chez la femelle les taches de la bande médiane des ailes supérieures sont à peine séparées par les nervures.

Type (H. T.): Un ♂, Bitje, Ja River, Cameroon (2,000 ft.) octobre-novembre, 1912, ex G. L. Bates.

Paratypes: Un ♂, une ♀, même origine, octobre, wet season; un ♂ même origine, dry season.

62. *P. cypraeofila* Btlr. f. indiv. *flaprae* Suff. (pl. IV, fig. 38).

Iris, xvii, p. 94, 1904.

Type (H. T.): Un ♂, Cameroon, Barombi stat., ex coll. Suffert.

Comme la précédente, cette forme est à dessins blanc pur; toutes deux paraissent localisées au Cameroon et aux parties avoisinantes du Congo, de même que l'espèce très voisine: *P. andronicus* Wd. à dessins également blanc pur.

63. *P. androclides* G.-Sm.

Rhopal exot., III, p. 47, pl. XXXIII, fig. 1, 2, ♀, 1900.

Type (H. T.): Une ♀, Stanley Falls, ex coll. H. Grose-Smith.

Individu à aile supérieure droite affectée d'une large perforation circulaire tératologique. Le nom de *mechowianus* Dew. (1885) a la priorité sur *androclides* G.-Sm.

64. *P. zenobia* F., f. indiv. *nobicea* Suff. (pl. V, fig. 42).

Iris, xvii, p. 94, 1904.

Type (H.T.): Un ♂, Togo, ex coll. Suffert.

Cette forme doit être placée en synonyme d'*odenatus* Westw. qui, d'après la figure originale (*Trans. Ent. Soc. Lond.*, p. 96, pl. 3, fig. 3, 1872) porte également aux ailes supérieures une tache dans l'extrémité de la cellule et une autre dans l'intervalle 6.

65. *P. cynorta* F. f. indiv. *norcyta* Suff. (pl. V, fig. 45).

Iris, xvii, p. 94, 1904.

Type (H.T.): Un ♂, Togo, ex coll. Suffert.

Cet individu appartient à la forme de petite taille (? saison sèche) dépourvue, en dessous, de tache blanche dans la cellule des ailes supérieures.

66. *P. cynorta* F. ♀.

Une seule forme de femelle a reçu un nom particulier, cependant ce sexe est, dans *cynorta*, nettement polymorphe; on peut distinguer quatre formes:

(1^o) f. *boisduvallianus* Westw.

Arcan. entom., i, p. 151, t. 40, figs. 1, 2, 1843.

Type (H. T.): Une ♀, Sierra Leone, ex coll. Boisduval < coll. Ch. Oberthür.

Caractérisée par ses ailes à fond noir avec des dessins blancs: aux supérieures un groupe subapical et un groupe discal de 3 taches inégales; aux inférieures une bande médiane étroite, assez bien définie, traversant la cellule entre les nervures 2-7 et l'extrémité.

67. (2^o) f. *lavochrea nova* (pl. V, fig. 41).

C'est la forme la plus répandue. Taches des ailes supérieures plus grandes, blanches, celles du groupe discal souvent un peu lavées de jaunâtre en dehors. Bande blanche des ailes inférieures graduellement fondue extérieurement dans une teinte jaune d'ocre foncé couvrant l'aile jusqu'au voisinage du limbe et sur laquelle s'écrivent nettement les traits noirs internervuraux.

Type (H.T.): Une ♀, Bitje, Ja River, Cameroon (2,000 ft.), octobre-novembre, wet season, ex G. L. Bates, coll. Hill Museum.

68. (3°) *f. ochropila nova* (pl. V, fig. 43).

Semblable pour le dessin à la précédente mais toutes les parties blanches remplacées par du jaune foncé ; taches des ailes supérieures un peu moins étendues.

Type (H.T.) : Une ♀, Congo belge oriental, Forest between Epuru (E. side) and Ituri River, mars, 1920, ex T. A. Barns.

69. (4°) *f. peculiaris* Neave.

Nov. Zool., xi, p. 342, pl. I, fig. 7, 1904.

Particulière à l'Uganda (loc. orig.) et à la région de la Semliki River (un individu, ex coll. Suffert < Hill Museum).

70. *P. echerioides* Trim.

Trans. Entom. Soc. Lond., p. 72, pl. 6, figs. 1, 2, 1868.

Type (H.T.) : Un ♂, Natal, Soujoumbili, mars, 1867, ex coll. R. Trimén (Cat. MSS., p. 334, No. 4).

Paratypes : Une série d'individus des deux sexes, même collection.

La femelle figurée avec le ♂ H.T. (loc. supr. f. 2) ne paraît être aucune de celles se trouvant parmi les exemplaires de la coll. R. Trimén actuellement au “Hill.” Parmi ceux-ci un ♂ (Natal Coast) a, en dessous des ailes inférieures, les traits noirs de la cellule dilatés et confondus en une macule unique. Un autre (Transvaal, Leydenberg Distr.) porte, en dessus des mêmes ailes, quelques traits jaunâtres vers l'angle supérieur. Un troisième (Caffraria), de petite taille, a la bande claire commune aux deux paires notablement élargie aux inférieures.

71. *P. echerioides* Trim. f. indiv. ♂ *riddeschi* Suff. (pl. I, fig. 4).

Iris, xvii, p. 93, 1904.

Type (H.T.) : Un ♂, Kilimandjaro, Modji, ex coll. Suffert.

Forme moins remarquable par la disparition de la tache blanche de l'intervalle 7 aux supérieures que par la présence aux mêmes ailes de trois points blancs submarginaux entre les nervures 1c—4.

72. *P. zoroastres* Drcc. s.-sp. *neumanni* Ksch. f. indiv. *subtanganyikae* Strd. “Lepidopt. Niepelt,” ii, p. 24, pl. XIII, fig. 15, 1916, “Deutsche-Ost-Afrika.”

Type (H.T.) : un ♂ (pas de localité à l'étiquette du Papillon) ex coll. Niepelt.

Cette minime aberration se réfère, ainsi que la suivante, à la s.-sp. *homeyeri* Plötz dont *neumanni* Ksch. est synonyme.

73. *P. zoroastres* Drce. s.-sp. *neumanni* Ksch. f. indiv. *zoroastrides* Strd. "Lepidopt. Niepelt.," ii, p. 24, pl. XIII, fig. 14, 1916, Deutsche Ost-Afrika.

Type (H. T.): Un ♂ (pas de localité à l'étiquette du papillon), ex coll. Niepelt.

74. *P. jacksoni* E. Sh. s.-sp. *ruandana* nova.

♂. Semblable à la race type d'Afrique orientale pour la taille et le dessin, mais toutes les parties claires un peu plus étendues et d'un blanc de neige.

En dessus : taches des ailes supérieures plus nettement ovalaires, celle de l'intervalle 1b à peine excavée de chaque côté; bande médiane des inférieures plus large—8.5 à 9 mm. dans sa partie médiane—presqu'également répartie sur l'extrémité de la cellule et le disque, rectiligne et un peu élargie de la nervure 7 au bord abdominal que son côté externe atteint au niveau du sommet de l'abdomen, ou un peu au-delà; points discaux un peu plus rapprochés du bord de l'aile. En dessous les taches des ailes supérieures sont notablement plus grandes qu'en dessus, la partie basale brune des inférieures subrectiligne, et la bande claire médiane, variée de blanc et de gris brun qui la suit, légèrement plus large et moins sinueuse extérieurement.

♀. Ne présente, comme différences assez nettes, qu'un léger élargissement de l'aire médiane jaunâtre des ailes inférieures au-delà de l'extrémité de la cellule, et comme chez le mâle le rapprochement du bord de l'aile des points submarginiaux blancs.

Dans les deux sexes les points de la tête et du prothorax sont blanc de neige.

Envergure : ♂, 81-84 mm. : ♀, 75-87 mm.

Type (H. T.) : ♂ (4,204A), Congo belge oriental, Masisi, N.W. Kivu (5,000 ft.), septembre, ex T. A. Barns.

Paratypes : Un ♂ (3,046), Kisiba, Bugoie Forest, E. Kivu (8,500 ft.), novembre, une ♀ (3,037), N. end Lake Kivu (5,000 ft.), octobre; une ♀ (3,462), Kivu Oso Watershed, N.W. Kivu (4,500 ft.—5,000 ft.), septembre, ex T. A. Barns.

En outre des caractères superficiels ci-dessus, cette race se distingue encore de la forme typique par l'armure génitale moins grande dans l'ensemble, la saillie apicale du dernier tergite libre (pseuduncus) plus mince et arrondie au sommet, la valve moins large, plus ovalaire, à bord supérieur moins convexe. Harpe un peu plus grêle, à dents de la crête supérieure plus courtes, moins irrégulières et ne portant du côté externe qu'une seule dent (harpe droite) ou deux (harpe gauche) isolées et non

cinq ou six, disposées en crête secondaire, comme c'est le cas chez *jacksoni-jacksoni*.

75. *P. sjöstedti* Auriv. s.-sp. *atavus* Le Cerf.

Bull. Soc. Ent. Fr., p. 336, 1912.

Paratype: Un ♂, Forêt du Kilimandjaro. Versant S.E., 1,800 à 2,000 mèt., avril, 1912, Ch. Alluaud et R. Jeannel, ex Museum de Paris.

76. *P. ridleyanus* White f. indiv. *fumatus* Niep.

Intern. Ent. Zeitschr., ix, p. 58, 1915; "Lep. Niep.," ii, p. 23, t. xiii, fig. 4, 1916, Kassai River.

Type (H. T.): Un ♂, Kassai Fluss, Congogebiet, ex coll. Niepelt.

Cette forme individuelle est synonyme d'*infuscatus* Schultze (1913), à laquelle se rapporte également *fumosus* Holland (1920).

77. *P. ridleyanus* White f. indiv. ♀ *vitrea nova*.

Caractérisée par la disparition de toutes les écailles formant les dessins rouges en dessus et en dessous; seules quelques-unes demeurent éparses sur le champ anal et en bordure de la ligne marginale noire aux ailes inférieures.

Type (H. T.): Une ♀, Yambio, Bahr el Ghazal, S. Sudan.

Ce spécimen est intact, ses franges entières, et il est parfaitement symétrique.

78. *P. ridleyanus* White f. indiv. ♀ (? an s.-sp.) *rosa nova* (pl. V, figs. 49, 50).

Toutes les parties rouges sont d'un rose incarnat vif, un peu plus clair aux ailes inférieures qu'aux supérieures. A celles-ci les taches discales sont très grandes et au nombre de cinq; les taches noires de la cellule sont largement et nettement entourées de jaune d'or; une tache de même couleur existe au milieu de l'intervalle 6 et un semis sub-marginal forme des points confus entre les nervures 1b et 4.

Aux ailes inférieures en dessus, les arcs et points noirs subterminaux sont étroits et les points noirs placés entre le milieu du bord abdominal et l'extrémité de la cellule se réduisent à deux, situés au voisinage de la nervure 3; région abdominale lavée de jaune. Dessous beaucoup plus clair que le dessus avec le noir fortement réduit.

Type (H. T.): Une ♀, Upper Ruwubu River, Urindi Distr., E. Tanganyika, août, 1919, ex T. A. Barns.

Paratype: Une ♀, même origine.

Il n'a pas été pris de mâle dans la région où ces femelles remarquablement claires ont été trouvées.

79. *P. pylades-angolanus* Gze. f. indiv. *hypochra* Boull.-Le Cerf.

Bull. Soc. Ent. Fr., p. 246, 1912.

Paratype: Un ♂, Oubangui, Congo français, ex Museum de Paris.

80. *P. pylades-angolanus* Gze. f. indiv. *lapydes* Suff. (pl. V, fig. 47).

Iris, xvii, p. 103, 1904.

Type (H. T.): Un ♂, Kilossa, Deutsche O. Afrika, ex coll. Suffert.

81. *P. fulleri* Gr.-Sm.

Ent. Mont. Mag., xix, p. 234, 1883.

Type (H. T.): Un ♂, Cameroon, Füller, ex coll. H. Grose-Smith.

Paratypes: Trois ♂ ♂, même origine.

82. *P. phrynon* Drce. (pl. V, fig. 44).

Ann. Mag. Nat. Hist. (6), xv, p. 332, 1895.

Type (H. T.): Un ♂, Matadi, Congo belge, ex coll. Druce.

N'est pas une espèce distincte mais seulement une forme individuelle déjà figurée par Aurivillius (*Ent. Tidsk.*, xvii, p. 71, 1896), du très variable *P. ucalegonides* Stgr. auquel elle se relie par des transitions.

83. *P. ucalegon* Hew. f. indiv. *legonuca* Suff. (pl. V, fig. 46).

Iris, xvii, p. 106, 1904.

Type (H. T.): Un ♂, S. Kamerun, ex coll. Suffert.

Variation minime et dont le Type est mal caractérisé, une petite tache cellulaire persistant à l'aile supérieure gauche.

84. *P. hachei-möbii* Suff. s.-sp. *camerunicus* nova.

♂. Coloration générale plus sombre, due à une écaillure plus dense et une légère extension des parties noires.

Ailes supérieures à aire basale noire coupée un peu plus obliquement et dépassant d'un millimètre la nervure 3 dans la cellule; au-dessous de celle-ci le noir s'étend de la nervure 3 à l'extrémité de 1a, atteignant en ce point 6 à 6, 5 millimètres de largeur. Bande terminale noirâtre, moins incurvée à son bord interne, arrivant presque au contact de la cellule à la base de la nervure 5 et descendant jusqu'au-dessous de 1b.

Aux ailes inférieures le champ distal noir borde le sommet de la

cellule dans lequel s'avance, chez certains specimens, un léger semis noirâtre. Le dessous des deux paires présente des différences correspondant à celles du dessus.

Envergure : 78-81 millimètres.

Type (H.T.) : Un ♂, Cameroon, Bitje, Ja River, wet season, ex G. L. Bates, coll. Hill Museum.

Paratypes : Trois ♂♂, même origine, Museum de Paris, et Hill Museum.

P. hachei Dew. et *P. möbii* Suff. ne sont que des formes d'une même espèce. En outre des specimens plus ou moins transitionnels que j'ai vus dans la petite série qui m'est passée sous les yeux et qui auraient suffi à justifier leur identité spécifique, je n'ai trouvé dans leur armure génitale que des différences de détail peu importantes.

Comparée à celle d'*hachei* (ex Congo français, Mus. Paris), l'armure de *möbii* (ex Congo belge oriental, Hill Mus.) ne s'en distingue que par la taille légèrement plus grande, la proéminence denticulée du bord distal de la valve un peu plus grosse ; la harpe un peu plus longue mais à lame inférieure plus grêle et dépourvue de dent avant le sommet. Ce dernier caractère est peut-être individuel car chez *camerunicus* il existe une dent à la harpe gauche (branche inférieure) et deux, dont une très grande, à droite.

Dans cette race d'ailleurs l'armure génitale est sensiblement plus grande, plus épaisse dans toutes ses parties, notamment la harpe et la proéminence denticulée du bord distal de la valve

85. *P. harpagon* G.-Sm.

Ann. Mag. Nat. Hist. (6, V, p. 224, 1890).

Type (H.T.) : Un ♂, Gabon, ex coll. Grose-Smith.

C'est un *P. auriger* Btlr. pourvu aux ailes supérieures d'un petit point blanc dans la cellule, en face de la base de la nervure 2.

86. *P. uganda* Lathy.

Trans. Ent. Soc. Lond., p. 9, pl. II, fig. 11, 1906, Entebbé.

La série d'exemplaires du "Hill" établit que cette espèce n'est qu'une forme de *P. almansor* Honr. à laquelle elle est rattachée par toutes les transitions. Il y a des specimens avec des points submarginaux très développés aux deux paires d'ailes, et d'autres qui en sont complètement dépourvus. Certains ont les taches des supérieures jaunes, d'autres blanches. Les taches des ailes supérieures : apicales, cellulaires, et du bord interne, varient aussi pour la grandeur, la coloration et ressemblent plus ou moins exactement à celles d'*almansor* Honr.

dont il existe deux ♂♂, et une ♀ (ex Rhodesia et Bukoba) dans la coll. du Hill.

87. *P. agamedes* Westw. f. indiv. *medesaga* Suff. (pl. I, fig. 5).

Iris, xvii, p. 106, 1904.

Type (H. T.) : Un ♂, Togo hinterland, ex coll. Suffert.

88. *P. leonidas* F. f. indiv. *onidale* Suff.

Iris, xvii, p. 106, 1904

Type (H. T.) : Un ♂, Muanza, Deutsche O. Afrika, ex coll. Suffert.

Paratype : Une ♀ même origine.

89. *P. leonidas* F., s.-sp. *brasidas* Fld. f. indiv. ♀ *melusina* nova (pl. V, fig. 48).

Forme mélanienne dans laquelle les ailes supérieures n'ont plus qu'une seule tache blanche discale bien développée dans l'intervalle 3 ; celle de l'intervalle 1b et les trois subapicales sont extrêmement réduites ; cellule entièrement noire à l'exception d'un très petit point blanc diffus près du milieu du bord inférieur ; taches apicales vestigiales ; points submarginaux absents. Ailes inférieures dépourvues de taches discales, et à points submarginaux indistincts.

Type (H. T.) : Une ♀, Malvern, Natal, ex coll. R. Trimén (Catalogue MSS., p. 382, No. 12).

Toutes les transitions entre *leonidas* F. et *brasidas* Feld. sont représentées dans la coll. du Hill Museum par des spécimens de Natal, Zululand et Rhodesia (ex coll. R. Trimén et H. Grose-Smith).

90. *P. mercutius* Sm. et Kirby.

Rhopal. exot., 28, Pap., p. 33, pl. 14, fig. 1, 1894.

Type (H. T.) : Une ♀, Morakween, Natal, 10 novembre 1892, ex coll. H. Grose-Smith.

N'est qu'une forme individuelle femelle de *P. antheus-nyassae* Btlr., comme le soupçonnait déjà Aurivillius (in : Seitz, xiii, 1910). Un second exemplaire, de petite taille, se trouve dans la coll. du Museum de Paris, ex Zanguebar, R. P. Faugères (1900).

91. *P. junodi* Trim.

Trans. Entom. Soc. Lond., p. 138, 1893.

Type (H. T.) : Une ♀, Delagoa Bay, ex coll. R. Trimén.

92. *P. polistratus* G.-Sm.

Ann. Mag. Nat. (6), iii, p. 121, 1889.

Type (H.T.): Une ♀, Mombasa, ex coll. H. Grose-Smith.

Paratype: Une ♀, Teita, même collection.

C'est la femelle de l'espèce décrite en 1890 par P. Mabille sous le nom de *P. sisenna*. *P. richelmanni* Weym. est une forme ♀ individuelle ayant les mêmes dessins que le ♂ (= *sisenna*), c'est-à-dire portant aux ailes inférieures des taches discales dans les intervalles 4 et 5, taches qui font défaut chez *polistratus* typique. La ♀ paratype de la coll. Grose-Smith appartient à la f. *richelmanni* Weym.

93. *P. polices* Cr. f. indiv. *liponesco* Suff. (pl. V, fig. 55).

Iris, xvii, p. 107, 1904.

Type (H.T.): Un ♂, Togo hinterland, ex coll. Suffert.

94. *P. polices* Cr. s.-sp. *laurentia* nova.

Je donne ce nom à la race d'Afrique orientale méridionale, habitant du Cap au Tanganyika Territory, en prenant pour Types des exemplaires de Natal. Distincte de la forme typique d'Afrique occidentale par le ton toujours plus pâle des taches vertes en dessus, et par le remplacement du noir en dessous par une teinte brun gris, exception faite des deux gros points submarginaux entre 6—8 et des arcs marginaux des ailes inférieures.

En outre les ailes sont un peu plus acuminées et les inférieures ont l'angle apical coupé droit.

Type (H.T.): Un ♂, Natal, Durban, J. H. Bowdler, ex coll. R. Trimmen (Cat. MSS., p. 377, No. 2).

Paratypes: Une ♀, même origine (Cat. MSS., p. 377, No. 3), et une série d'exemplaires des deux sexes du Natal de la même collection.

95. *P. columna* Wd. f. indiv. *loncona* Suff. (pl. V, fig. 53).

Iris, xvii, p. 107, 1904.

Type (H. T.): Une ♀, Mikindani, Deuts. O. Afrika, ex coll. Suffert.

Il existe des traces de bande médiane verte sous la cellule dans la base de l'intervalle 2.

Parmi les exemplaires de *P. columna* de la coll. du Hill, un ♂ a un trait vert sous la cellule dans l'intervalle 3; un autre porte, aux ailes inférieures, un trait transversal au milieu de l'intervalle 5; chez un troisième les ocelles de l'angle anal sont orange dessus et dessous.

Tous ces spécimens viennent de: Delagoa Bay, ex coll. H. Grose-Smith.

96. *P. illyris* Hew. f. (? an s.-sp.) *hamatus* Joic. and Talb. (pl. V, fig. 54).

Proc. Zool. Soc. Lond., 1917, p. 271, 1918.

Type (H. T.) : Un ♂, German East Africa, ex coll. Suffert.

97. *P. illyris* Hew. f. *stictica nova* (pl. V, fig. 52).

Taille petite, bande des ailes supérieures et inférieures plus étroite que dans la forme type. Ailes supérieures avec une rangée de points submarginiaux jaunes, bien nets, placés entre les nervures. En dessous ces points transparaissent légèrement.

Type (H. T.) : Un ♂, Friapere Forest, Coomassie, 1913.

Paratypes : Neuf ♂ ♂, même origine.

Sur quatorze exemplaires capturés dans la localité ci-dessus, dix sont nettement *stictica*, deux ♂ ♂ et une ♀ n'ont pas de points submarginiaux, une ♀ de très grande taille non plus, mais celle-ci, très usée par le vol et déchirée, paraît appartenir à une génération antérieure.

**A PRELIMINARY REVISION OF THE GENUS
TRISULOIDES Btlr. (Lep. Het. Noctuidae).**

WITH DESCRIPTIONS OF NEW GENERA AND NEW SPECIES, BY
MISS A. E. PROUT, F.E.S.

AND NOTES ON THE GENITALIA BY
G. TALBOT, F.E.S.

(Plates XIII, XVI, XVII.)

IN publishing the following paper we desire to acknowledge our indebtedness to Lord Rothschild for valued help in the loan of types for study, and especially to Mr. W. H. T. Tams for making dissections of some species which were not available in the Joicey collection.

Hampson in Cat. Lep. Phal., xiii, has included in the genus *Trisuloides* Btlr. all the species mentioned in the following paper, but an examination of the genitalia (kindly undertaken by Mr. G. Talbot) and a careful study of other structural points has led us to the conclusion that there are several distinct genera included in this genus by Hampson. In the following paper an attempt has been made to group the genera and species by an analysis of all the structural characters presented by the palpus, antenna, wing-shape, length of cell and genitalia, together with some minor points. All references, unless given in the text, will be found in Cat. Lep. Phal., xiii, and Hampson's synonymy of species is accepted unless otherwise stated. Species which were not before me for study are marked with an asterisk.

Although the following conclusions are set forth with some diffidence, the studies of genitalia and of descaled palpi having been based in almost every instance on single specimens, and certain points (as for example the junction of palpus with head) being difficult to judge with accuracy, it is hoped and believed that the groupings (being based on a number of different points) may prove of some service in the future elucidation of this interesting group.

Measurements of the length of cell are taken on the underside ;

palpus "straight" or "curved" has reference chiefly to the form of second segment.

The fourteen species represented in the Joicey Collection seem to fall naturally into six genera as indicated below; the diagnoses of genitalia are contributed by Mr. G. Talbot.

Key to Genera.

1. Wings *strongly* glossy: abdomen very robust almost to anus, the crest on segment 8 exceptionally large.
 Genitalia: Valve square-shaped Genus 1
 Wings moderately or slightly glossy; abdomen not extra robust, more or less tapering towards anus, the crest on 8 not larger than that on 4.
 Valve lanceolate (2)
2. Palpus straight; hind wing with blue sheen.
 Valve with *two* internal processes Genus 2
 Palpus curved; hind wing without blue sheen.
 Valve with *one* internal process (3)
3. Fore wing broad, the cell about one-half length of wing; crests on 3 and 4 moderately large; ♂ antenna bipectinate. Process of valve strongly chitinated or toothed (4)
 Fore wing narrow, the cell *more* than half length of wing; crests slight; ♂ antenna ciliate. Process not strongly chitinated and with or without teeth (5)
4. Segment 1 of palpus of normal length; ♂ antenna bipectinate for almost the whole length of shaft; ♀ antenna serrate or ciliate. Process finger-shaped; uncus broad *Trisuloides*
 Segment 1 of palpus rather short; ♂ antenna bipectinate to nearly three-fourths; ♀ antenna shortly bipectinate. Process lanceolate; uncus long and narrow Genus 4
5. Fore wing elongate; palpus compactly scaled, with segment 1 short; hind wing more or less orange-yellow. Process of valve with two or more small teeth or curved at its end (*entoxyantha*) *Tambana*
 Fore wing *not* elongate; palpus rather loosely scaled, with segment 1 of ordinary length; hind wing brownish-grey or very pale-yellow. Process of valve without teeth, not curved at the end *Anacronicta*

GENUS 1. *Anepholcia* gen. nov.

External characters (pl. XVII, figs. 1, 2):—

Palpus straight, loosely scaled; segment 1 narrow, with bifurcate point at base. Wings strongly glossy. Fore wing broad, with the cell about four-sevenths length of wing. Hind wing bright-yellow. Abdomen very robust, hardly narrowing to anus, the crest on segment 8 exceptionally large. ♂ antenna bipectinate with moderately long pectinations; ♀ shortly bipectinate.

Genitalia (pl. XVI, figs. 1, 2) :—

Valve square shaped, with the dorsal and ventral edges thickened and folded over. The upper part of each fold is more strongly chitinized, the anterior third of the ventral fold being free, forming a finger-like process. Penis armed with cornuti. Uncus long and slightly curved, fairly stout, apex square or narrow and rounded.

For this and subsequent genera, see also diagnosis in Cat. Lep. Phal., xiii, unless in any way contradicted.

talboti sp. nov. (Type.)

1. *Anepholcia talboti* sp. nov. (pl. XIII, fig. 9).

♂, 50—58 mm.; ♀, 60—64 mm.

Exceedingly near to *pygaria* Warr., but can be easily distinguished by the following differences.

In *talboti* the tibiae are less densely clothed than in *pygaria* and with shorter hairs; in a very long series of *talboti* this distinction appears to hold good. Palpus beneath and pectus blackish, with only a few white hairs; in *pygaria* these are pure white except in one ♂ where (together with the head) they are tinged with pale-greenish, but this has somewhat the appearance of a stain and is in any case quite distinct from the black coloration of *talboti*. Antemedial line *strongly* angled outward behind M (only slightly so in *pygaria*). Orbicular a dark ring, not a dark spot. Postmedial white line proximally (and sometimes distally) defined by a sharply-marked dark line; in *pygaria* the white line is only slightly defined proximally and is distally defined by a *diffused* bluish-grey crenulate line; this difference is very clearly marked through the whole series of specimens.

On the hind wing in *pygaria* there is a distinct yellow line between the dark terminal shade and the fringe, reaching almost to apex; in *talboti* this line is very slight or absent, except for the small yellow tornal patch.

On the underside the termen of both wings is paler in *pygaria* ♂ and ♀ than in *talboti*.

A few ♂♂ and one ♀ have a white patch somewhat as in the type of *pygaria*, though less sharply defined.

Genitalia (pl. XVI, fig. 2) :—

Valve somewhat as in *pygaria* but less broad. The free end or process of the ventral fold is shorter and less pointed than in *pygaria*,

and is not curved. The dorsal fold ends in a short bifid process. Uncus somewhat as in *pygaria* but is narrowed at the apex, and has a well-developed keel on the back. Penis with cornuti generally distributed over the end of the eversible membrane. Sheath with a thickened ring of short spines at its upper end.

In the specimens dissected the eversible membrane was retracted, with its end about two-thirds down.

S.W. Sumatra: Slopes of Mount Korintji, 7,300 feet, August-September, 1921 (C., F. and J. Pratt), ninety-two ♂♂, three ♀♀; North Korintji Valley, 5,000 feet, September-October, 1921, eighteen ♂♂, two ♀♀.

In view of the apparent rarity of *pygaria* Warr., and the large number of specimens received of *talboti*, it has seemed advisable to choose *talboti* as the type of *Anepholcia*, rather than the longer-known but apparently rarer *pygaria*.

2. *Anepholcia pygaria* Warr., ♂ (pl. XIII, fig. 8).

Trisuloides pygaria Warr.

Nov. Zool., xix, 2 (1912) (W. Sumatra) (♀).

♂, 54—58 mm.

Antenna with moderate pectinations to beyond middle, shortening gradually to serrations, which are continued almost to apex.

Fore and mid tibiae very thickly clothed with long hair, the hind tibia less densely clothed.

Fore wing with the antemedial line angled outward just behind M, not excurved at M; the wing is somewhat rubbed here in the type and has probably not been quite correctly seen; the white patch beyond the cell broken up by greyish shading between the veins; this patch may probably be aberrational.

Genitalia (pl. XVI, fig. 1):—

Valve square-shaped, narrow posteriorly. The dorsal and ventral edges are thickened and folded in (characteristic of the whole group). The upper part of each fold is more strongly chitinized, the anterior third of the ventral fold being free, forming a finger-like process which is curved round the edge of the valve. Uncus long and slightly curved, fairly stout, apex square. Penis with one patch of cornuti on the eversible membrane. Sheath strongly chitinized, its end obliquely truncate, and with a row of short spines along its edge on one side.

S.W. Sumatra : Barisan Range, west slopes, 2,500 feet, October-November, 1921 (C., F. and J. Pratt), five ♂♂ ; North Korintji Valley, 5,000 feet, September-October, 1921, one ♂.

The ♀ type of this species is in coll. Tring Mus. There is one ♀ from Selangor in coll. Brit. Mus.

GENUS 2. *Disepholcia* gen. nov.

External characters (pl. XVII, figs. 3, 4) :—

Palpus straight, loosely scaled ; segment 1 narrow, flattened at base (simple). Wings slightly glossy. Fore wing broad, with the cell about one-half length of wing. Hind wing with blue sheen. Abdomen moderately robust, the crests on three and four moderately well-developed. ♂ antenna bipectinate ; ♀ antenna subserrate.

Genitalia :—

Valve lanceolate, anteriorly finger-shaped, and with two processes on the inside. Penis not armed with cornuti. Uncus short ; apex broad, with a short point.

1. *Trisuloides caerulea* Btlr. (Type.)

Genitalia :—

Valve lanceolate, and anteriorly finger-shaped. Each fold develops a short, thick, and smooth process. The ventral process is slightly pointed and crosses the dorsal one. Uncus short and broad, apex with a point ; no keel developed.

GENUS 3. *Trisuloides* Btlr.

External characters (pl. XVII, figs. 7-10) :—

Palpus curved, compactly scaled ; segment 1 narrow, with single point at base. Wings slightly glossy. Fore wing broad, with cell about one-half length of wing. Hind wing bright yellow. Abdomen robust, with the crests on 3 and 4 generally well developed. ♂ antenna bipectinate for almost the whole length of shaft. ♀ antenna typically serrate.

Genitalia (pl. XVI, figs. 3-8) :—

Valve lanceolate, with a toothed process on the inside, this process finger-shaped. Penis not armed with cornuti ; sheath bearing a small heart-shaped appendage attached on the ventral side about midway. Uncus broad, with a wide apex and a slight dorsal keel.

1. *Trisuloides sericea* Btlr. (Type.)

Genitalia (pl. XVI, fig. 5):—

Valve long and narrow, lanceolate. The ventral fold develops a process on the inside of the valve. This process is finger-shaped and strongly chitinized. Its base is formed of flexible membrane which is connected with the inner edges of both folds. The process is normally directed anteriorly, but is capable of being raised to a position vertical to the plane of the valve. It is armed with teeth along its proximal edge, which, at the base, projects in a short beak. Uncus stout, broad, apex slightly pointed, and keel on the back slightly developed.

2. *Trisuloides sericea trigonoleuca* A. E. Prout.

Trisuloides trigonoleuca A. E. Prout, BULL. HILL MUS., I, p. 227 (1922) (Central Ceram).

Genitalia (pl. XVI, fig. 8):—

Valve as in *sericea*. Process more strongly chitinized than in the other two forms examined, teeth and beak more prominent.

3. *Trisuloides papuensis* Warr. (Probably another *sericea* subsp., although placed by Hampson in Section I of this genus.)

4. *Trisuloides sericea hawkeri* subsp. nov. (pl. XIII, fig. 10).

♂, 53—57 mm.

Fore wing almost exactly as in subspecies *trigonoleuca*, but almost always paler, more filled in with bluish-white between postmedial and subterminal lines (more as in the type-form).

Hind wing with rather more dark hair at base than in *sericea trigonoleuca*, but much less than in the type-form; a subterminal dark shade always present from M^2 to tornus (leaving fringe and termen white), usually more or less continuous to costa and often with dark terminal shading beyond it.

Undersurface nearly as in subspecies *trigonoleuca*, but with discal spot and postmedial line usually better developed on both wings.

♀, 63—68 mm.

Differs from the ♂ in the larger size, the rather more obscure markings of fore wing, and especially in the broader border of hind wing (though this varies a little in breadth), which is more as in typical

sericea, though the basal hair is much less strongly developed than in the type-form.

Genitalia (pl. XVI, fig. 6) :—

Valve as in *sericea*. Process shorter and less strongly chitinated and toothed.

Central Buru : Kako Tagalago, 2,700 feet, May, 1922, nine ♂♂, four ♀♀; also one ♂ from Central West Buru : Gamoe 'Mrapat, 5,000 feet, March-April, 1922.

But for the difference in genitalia this subspecies might have passed as an aberration of *sericea trigonoleuca*, of which there is unfortunately insufficient material for a close study, but on the strength of the genitalia I have ventured to regard the slight difference quoted above as subspecific.

5. *Trisuloides albiplaga* Warr. (A very distinct-looking species, which may possibly, when dissected, be found to belong to yet another genus.)

Tambana catocalina Moore may possibly belong here; the type of *polyphaenaria* Warr. (sunk by Hampson to *catocalina*) agreeing well with *albiplaga* in the structure of antenna (?). But it is so distinct from all other *Trisuloides* species that in the absence of the ♂ its correct position must remain extremely doubtful.

GENUS 4. *Smilepholcia* gen. nov.

External characters (pl. XVII, figs. 5, 6) :—

Palpus curved, compactly scaled; segment 1 narrow, rather short, flattened at base (slightly bifurcate). Wings slightly glossy. Fore wing broad, with cell about one half-length of wing. Hind wing yellow. Abdomen robust, with the crests on 3 and 4 generally well developed. ♂ antenna bipectinate to nearly three-fourths; ♀ antenna shortly bipectinate.

Genitalia :—

Valve lanceolate, toothed process on the inside, this process lanceolate. Penis not armed with cornuti. Uncus long and narrow, slightly curved, apex without a beak.

1. *Trisuloides luteifascia* Hamps. (Type.)

GENUS 5. *Tambana* Moore.

External characters (pl. XVII, figs. 11, 12) :—

Palpus curved, compactly scaled; segment, 1 very short and broad, flattened at base (bifurcate). Wings moderately glossy. Fore

wing elongate, with the cell four-sevenths to three-fifths length of wing. Hind wing more or less bright-yellow. Abdomen rather slender, the crests normally slight. ♂ antenna ciliate. ♀ antenna typically with bristles and short cilia.

Genitalia :—

Valve lanceolate, with an internal process, this process not strongly chitinized and sometimes with a few small teeth along inner edge; the apex not pointed. Penis generally armed with small cornuti in one patch. Uncus long, narrow and curved, the apex with either a short beak or this beak vestigial.

1. *Tambana variegata* Moore. (Type.)

Genitalia :—

Valve obovate but partaking of the lanceolate type. A single process finger-shaped, curved and smooth. Uncus long, narrow, and slightly curved, apex with a short beak.

2. *Moma entoxantha* Hampson (the figure in Cat. Lep. Phal., xiii, makes the fore wing too broad).

Genitalia :—

Process without teeth and with its upper end incurved. Vesica without cornuti. Penis sheath bearing some short spines at its upper end.

3. *Trisuloides glauca* Hampson.

Genitalia :—

Valve as in *variegata*. Process similar but almost straight, with or without a few small teeth. Uncus long and strongly curved, apex with beak vestigial. Vesica with cornuti generally distributed over its end.

GENUS 6. *Anacronicta* Warr.

External characters (pl. XVII, figs. 13, 14) :—

Palpus curved, rather loosely scaled; segment 1 rather broad, with a single point at base. Wings slightly glossy. Fore wing of moderate breadth, not elongate, the cell almost or about three-fifths length of wing. Hind wing typically greyish-brown. Abdomen moderately robust, the crests small, those on segments 3—6 of about equal size. ♂ antenna ciliate. ♀ antenna with bristles and short cilia.

Genitalia :—

Valve lanceolate, with an internal process, this process not toothed but pointed at the apex. Penis armed with cornuti, or with a covering of closely-set short spines. Uncus long, narrow and curved, apex with a short beak.

1. *Aplectoides caliginea* Btlr. (Type.)

Genitalia :—

Valve lanceolate. Process long, pointed, smooth, and slightly curved, Penis with cornuti present in three patches. Uncus, long and strongly curved, apex with a short beak.

2. *Aplectoides nitida* Btlr.

3. *Plataplecta plumbea* Btlr.

4. *Acronycta flavala* Moore.

5. *Tambana pallidipennis* Warr. (Genitalia examined from a dissection made by Mr. Tams.)

Genitalia :—

Valve and process as in *caliginea* and *infausta*. The process is curved to near the base. Penis with cornuti in four patches. Uncus as in the preceding forms.

6. *Mamestra infausta* Wlk. (= *Tambana nigra* Warr.)

Genitalia :—

Valve and process as in *caliginea*. The process is almost straight with a curve near its base. Penis without cornuti, but the membrane which bears these in the other forms of this group is here covered with closely-set short spines of almost equal size. Uncus long and strongly curved.

7. *Tambana fuscipennis* Warr. (Although only known in the ♀, this appears to me a distinct species.)

8. *Aplectoides obscura* Leech. (Genitalia examined from a dissection made by Mr. Tams.)

Genitalia :—

Valve and process as in the preceding forms. The process stout, and strongly curved to the middle. Penis with cornuti in four patches. Uncus as in the preceding forms.

It will be noticed that one species included by Hampson in *Trisuloides* is omitted from the foregoing scheme of the genera: the Palaearctic *Acronicta cornelia* Stgr. This is only known to me from a single specimen in coll. British Museum, and I have had no opportunity of diagnosing it according to the system employed above. It appears to me, however, so far removed from all other *Trisuloides* species that there is little doubt that Warren is correct in erecting for it a separate genus; in which case it will stand as *Xanthomantis* Warr., Seitz' "Macrolep.," iii, p. 18 (1909).

Acronicta cornelia Stgr. (type).

MODIFICATIONS OF GENITALIA.

The species examined in the group of genera dealt with here exhibit a certain similarity of structure, and one may trace the development of certain organs.

All the species agree in the valve possessing a fold along the dorsal and ventral edges. The ventral fold has become modified to form a chitinous process. This is seen in its most simple form in *Anepholcia pygaria*, in which a portion of the fold is free from the other membranous part of the valve. In *A. talboti* this is carried a step further, the free end of the fold being shortened and less curved, whilst an attempt to develop a second process is seen on the dorsal fold. The development of two processes is seen in *Disepholcia caerulea*, and it is possible that some forms may still be found in which the development of two processes is less pronounced.

The development of the process from a finger-like smooth appendage through an increasing chitination to a strongly chitinated and toothed appendage is seen in *A. pygaria*, *talboti*, *D. caerulea*, *T. variegata*, *glauca*, the *Anacronicta* forms, *Smilepholcia*, and finally in *Trisuloides*.

Similarly with the uncus, we may trace modifications from the short and broad type to a sickle-shaped and narrow type, the former represented by *D. caerulea*, thence through *Trisuloides*, *Anepholcia*, *Smilepholcia*, to *Anacronicta*.

The presence or absence of cornuti on the eversible membrane of the penis is a character which, although not generically constant, is of specific value.

TABLE SHOWING DISTRIBUTION.

Anepholcia A. E. Prout.

<i>talboti</i> „ „ „	...	South West Sumatra.
<i>pygaria</i> Warr.	...	„ „ „ ; also in Brit. Museum from Selangor.

Disepholcia A. E. Prout.

<i>caerulea</i> Btlr.	...	Punjab ; Assam, in coll. Joicey.
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Trisuloides Btlr.

<i>sericea sericea</i> Btlr.	...	China ; Punjab ; Sikkim ; Assam.
<i>sericea trigonoleuca</i> A. E. Prout	...	Central Ceram.
<i>sericea hawkeri</i> „ „ „	...	Central Buru.
<i>papuensis</i> Warr.	...	British New Guinea.
<i>albiplaga</i> „	...	Khasias.
<i>catocalina</i> Moore	...	Sikkim ; Java.

Smilepholcia A. E. Prout.

<i>luteifascia</i> Hmps.	...	Sikkim ; Assam.
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Tambana Moore.

<i>variegata</i> Moore	...	Sikkim ; Darjeeling in coll. Joicey.
<i>entoxantha</i> Hmps.	...	Sikkim ; Sabatoo in coll. Joicey.
<i>glauca</i> Hmps.	...	Assam.
<i>subflava</i> Wilem.	...	Formosa ; West China.
<i>albistellata</i> Hmps.	...	Assam.
<i>c-album</i> Leech	...	West China.

Anacronicta Warr.

<i>caliginea</i> Btlr.	...	Japan ; East Siberia ; Corea ; Central and West China.
<i>nitida</i> Btlr.	...	Japan ; West China.
<i>plumbea</i> Btlr.	...	Japan.
<i>flavala</i> Moore	...	Sikkim ; Bhutan.
<i>pallidipennis</i> Warr.	...	West Java.
<i>infausta</i> Wlk.	...	Assam.
<i>fuscipennis</i> Warr.	...	Burmah. A ♀ in coll. Joicey from Tonkin is placed here provisionally though the hind wing is slightly darker still.
<i>obscura</i> Leech	...	West China ; Kashmir ; Punjab.

A form from the Punjab, allied to *infausta* and confused by Hampson with it, shows differences in the genitalia from the Assam form (*nigra* Warr.). This form, which is unrepresented in coll. Joicey, is being investigated and will probably require naming later.

Xanthomantis Warr.

cornelia Stgr. ... East Siberia.

The following references to Warren's arrangement of this group in Seitz' "Macrolep.," iii and xi, are omitted or incomplete in Cat. Lep. Phal., xiii.

Anepholcia pygaria Warr.

Trisuloides pygaria Warr.; Warren, Seitz' "Macrolep.," xi, p. 41,
pl. v i (1912)

Disepholcia caerulea Btlr.

Trisuloides caerulea Btlr. l.c., pl. iv f.

Trisuloides sericea sericea Btlr.

Trisuloides sericea (= *catocalina* Moore) l.c., pl. v k.

Trisuloides papuensis Warr.

Trisuloides papuensis Warr. l.c., p. 42, pl. iv e.

Trisuloides albiplaga Warr.

Trisuloides albiplaga Warr. l.c., p. 41, pl. iv f.

Trisuloides catocalina Moore.

Trisuloides polyphaenaria Warr. l.c., p. 42, pl. iv e.

Smilepholcia luteifascia Hampson

Trisuloides luteifascia Swinh. l.c., p. 41, pl. v k.

Tambana variegata Moore.

Tambana variegata Moore l.c., p. 43, pl. iv h.

Tambana entoxantha Hampson.

Trisuloides entoxantha Hampson l.c., p. 42, pl. iv e.

Tambana glauca Hampson.

Trisuloides glauca Hampson l.c., p. 42, pl. iv e.

Tambana subflava Wilem.

Tambana subflava Wilem. l.c., p. 43, pl. iv h.

Tambana c-album Leech.

This species seems to be omitted from Warren's work.

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Anacronicta caliginea Btlr.

Anacronicta caliginea Btlr. (= *nitida* Graes, nec Butler) ; Warren, Seitz' "Macrolep.," iii, p. 18, pl. iii *k* (1909).

Anacronicta nitida Btlr.

Anacronicta nitida Btlr. l.c., p. 18, pl. iii *k*.

Anacronicta plumbea Btlr.

This species seems to be omitted from Warren's work.

Anacronicta flavala Moore.

Tambana flavala Moore ; Warren, Seitz' "Macrolep.," xi, p. 43, pl. iv *g* (1912).

Anacronicta pallidipennis Warr.

Tambana pallidipennis Warr. l.c., p. 43, pl. iv *g*.

Anacronicta infausta Wlkr.

Tambana infausta Wlkr. l.c., p. 43, pl. iv *g, h*.

Tambana nigra Warr. l.c., p. 43, pl. iv *g*.

Anacronicta fuscipennis Warr.

Tambana nigra fuscipennis Warr. l.c., p. 43, pl. iv *g*.

Anacronicta obscura Leech.

Anacronicta obscura Leech ; Warren, Seitz' "Macrolep.," iii, p. 18 pl. iii *c* (1909).

NOTE.—In the final revision of this paper the following note was accidentally omitted :—

In addition to the external characters given in the foregoing diagnoses of genera the characters given by Hampson in his diagnosis of *Trisuloides* in Cat. Lep. Phal. xiii are to be understood unless in any way contradicted.

SOME NEW FORMS OF INDO-AUSTRALIAN NOCTUIDAE.

By Miss A. E. PROUT, F.R.S.

Plate XXII.

AGROTINAE.

1. *Agrotis pediciliata*, sp. nov. (pl. XXII, fig. 6).

♂, 34—36 mm.

Exceedingly like *Agrotis owgarra* Beth.-Baker (*Nov. Zool.*, xv, 196 [1908] [*Brit. New Guinea*]), sunk by Sir George Hampson to *Agrotis rubicilia* Moore (*Graphiphora rubicilia* Moore, P.Z.S., 1867, p. 55 [Sikkim]). Appears to agree exactly with *owgarra* except in the colour of fore wing—which is ochraceous-brown in two specimens, reddish-brown in the other—in the slightly more distinct markings of fore wing and the presence of some white shading along proximal two-thirds of costa, the slightly less ample hind wing, and especially in the different structure of antenna. In *owgarra* the fascicles are virtually sessile, in *pediciliata* they arise on quite long serrations (at their longest nearly as long as diameter of shaft), the shaft also bearing a number of shorter sessile hairs. Except for this structural difference *pediciliata* should almost certainly be regarded as no more than a subspecies of *owgarra*.

Angi Lakes, Arfak Mountains, N. Dutch New Guinea. 6,000 feet. January-February, 1914 (A., C. and F. Pratt), three ♂♂.

ACRONYCTINAE.

2. *Checupa equifortis* sp. nov. (pl. XXII, fig. 3).

♂ ♀, 49—57 mm.

Vestiture of ♂, abdomen and wings beneath, much as in *C. fortissima* Moore (P.Z.S., 1867, p. 60, pl. 6, fig. 5 [Sikkim]), but the hair on the costa of hind wing appears thicker than in Indian specimens, extending only to about middle of wing, and the wing itself seems rather more highly arched towards base. ♀ vestiture much as in *fortissima* ♀.

M¹ of fore wing arises nearer to M² than to R³, M² being slightly down-curved; in *fortissima* the three veins are equidistant at origin (as shown in Cat. Lep. Phal. vii, p. 112), M² being scarcely down-curved. Termen of hind wing with a slight prominence from R³ to M² (more flattened than in *fortissima*, especially in the ♂).

Coloration of thorax and fore wing apparently about as in *fortissima* (allowing for the fresher condition of *equifortis* specimens); the markings also similar, but the dark shading a trifle heavier, the terminal streaks more irregular, forming a point proximally on R² and almost absent between M¹ and M²; in the type of *fortissima* the streaks are of nearly even length and breadth, except the one behind M¹, which is small and pointed, and the one in fold, which is broad, rounded and almost divided in the middle.

Hind wing a little deeper in tone than in *fortissima*.

Both wings beneath almost as in *fortissima*, but the postmedial line of hind wing rather more crenulate, less evenly waved.

S.W. Sumatra: Slopes of Mount Korintji, 7,300 feet, August-September, 1921, thirty-five ♂ ♂, five ♀ ♀.

Possibly a race of *fortissima* Moore, from the ♀ of which it differs very little; but in addition to the structural points named above, the male type has the fore wing perceptibly narrower and more elongate than in the ♂ of *equifortis*.

3. *Checupa curvivena* sp. nov. (pl. XXII, fig. 4).

♂ ♀, 54—60 mm.

♂ vestiture somewhat as in *fortissima* and *equifortis*, but the hair on hind wing even longer and more up-standing at costa, then slight to the well-developed brush of hair along cell just before M. Fore wing in both sexes a little broader than in *equifortis*, the ♂ with M¹ distorted (proximally downcurved, then distally upcurved), M² arising from a little nearer base than in either of the other two species and sometimes very slightly downcurved; hind wing shaped much as in *equifortis*.

Thorax and fore wing coloured much as in *fortissima* and *equifortis*, from both of which it is, however, easily differentiable by the broader and smoother brown shading, which forms a broad, oblique antemedial band (only interrupted by slight traces of a fine green line), a triangular costal mark between orbicular and reniform, a broad half-band beyond reniform (sometimes prolonged so as almost to join the terminal tornal

spots) and a subapical triangular mark; reniform not distally lobed behind (as in the other two species).

Hind wing and underside much as in *fortissima* and *equifortis*.

S.W. Sumatra: Slopes of Mount Korintji, 7,300 feet, August-September, 1921, twenty-one ♂♂, five ♀♀; North Korintji Valley, 5,000 feet, September-October, 1921, three ♂♂, two ♀♀.

At once distinguishable in the ♂ by the neuration of fore wing; differentiable also in both sexes by the dark bands and the shape of the reniform.

SARROTHRIPINAE.

4. *Risoba ocellata* sp. nov. (pl. XXII, fig. 7).

♀, 34—37 mm.

Antenna black with a few white scales; palpus, head, patagia, tegulae and thorax black and white, the patagia broadly green at base, the tegulae green at middle, tawny-brown at tips. Abdomen above dirty-white, laterally and anally darker, with the crests tawny-brown.

Fore wing pois-green (see Ridgway, pl. xli), more tinged with yellowish towards termen, with the marking black and white, subbasal line represented by black and white spots on costa and M; antemedial line white, strongly waved, from one-third costa to near base of hindmargin; the anterior half of space between subbasal and antemedial lines black; claviform white outlined with black, proximally rather broad; orbicular a black-outlined white spot; reniform white, black-outlined, with a posteriorly-broadened black streak at middle: a diffused black medial line bent outward from middle of costa to beyond reniform (where it broadens to a black patch), thence rather oblique to about three-fifths hindmargin; postmedial line represented by a white spot at about four-sevenths costa and a finely dentate black line from R^1 to hindmargin crossed by more or less distinct white streaks on the veins; a broad blackish subterminal shade, forming a distinct waved line distally and broken by white spots on the veins (broad and almost conjoined on the medials); costa shaded with black between ante- and postmedial lines and with black and white spots from postmedial line to apex; termen with the veins black and white and with large black spots behind costa and R^1 ; a row of sharply-defined interneural black lines on termen; fringe chequered black and white.

Hind wing whitish, with fuscous shading towards termen, leaving a distinct pale, posteriorly dark-outlined postmedial line, more or less

broken into spots on the veins; a slight dark discal spot; fringe white, with dark lines at centre and at tips, slightly interrupted at the veins.

Underside of fore wing predominantly fuscous, paler at base and hind margin, with a postmedial white spot on costa, white spots on termen and white streaks at the veins on fringe; slight dark ante-medial, medial and postmedial lines. Hind wing white with fuscous irroration at costa and terminal shading; a dark cell-dot, slight, nearly straight medial line and dentate postmedial line, strongly excurved from costa to fold, thence bent outward to near tornus; termen and fringe lined with fuscous.

♂, 32 mm.

Apparently somewhat paler on both wings above and beneath than the ♀, but is in very poor condition.

S.W. Sumatra: Barisan Range, western slopes, 2,500 feet, October-November, 1921 (C., F., and J. Pratt), one ♂, one ♀. A ♀ from Bidi, Sarawak, 1907-08 (C. J. Brooks), which appears to agree with the type of *ocellata* except in the slightly smaller size, is before me as I write.

A very distinct species; perhaps nearest to *R. jucunda* Walk. (*Diphthera jucunda* Walk., *Journ. Linn. Soc. Zool.*, vi, p. 178 [1862] [Sarawak]).

ACONTIANAE.

5. *Sinna joiceyi* A. E. Prout. ♂.

Sinna joiceyi A. E. Prout, BULL. HILL MUS., I (part 2), p. 215, (♀). (Central Ceram).

♂, 38 mm.

Base of antennal shaft, head, thorax and fore wing light cadmium yellow (see Ridgway, pl. iv). Markings as in the ♀, but the red lines slightly broader and darker. Abdomen with a rather long creamy-white anal tuft, the ventral surface tinged with yellow. Underside of both wings almost uniform cadmium yellow (Ridgway pl. iii), with the exception of the proximal two-thirds of fore wing from fold to hind margin, which is almost white; slight markings as in the ♀.

Central West Buru: Gamoe 'Mrapat, 5,000 feet, March-April, 1922 (C., F., and J. Pratt), one ♂. Taken with one typical ♀ and two ♀♀ of *ab. jacobi*, which do not appear to differ from specimens from Central Ceram.

6. *Carea unipunctata fulvida* subsp. nov.

♂, 40—46 mm.

Differs from typical *unipunctata* Beth.-Bak. (*Nov. Zool.*, xiii, p. 242 [1906] [*Brit. New Guinea*]) in the rather larger average size and the paler coloration, the red tones being replaced, on body, legs and fore wing, by pale reddish-ochraceous (tawny). Fore wing with the lines even more indistinct than in typical *unipunctata*, sometimes practically obsolete, but the black cell-spot and dark fringe almost as strong as in the typical form. Hind wing rather paler above and beneath, in *unipunctata fulvida*, especially so on underside of costa.

Central West Buru: Gamoe 'Mrapat, 5,000 feet, March-April, 1922, nine ♂♂.

A single ♀ (45 mm.) from Central Ceram may possibly belong to this subspecies, but it is coloured much more as in typical *unipunctata*, with the lines distinct (extra widely separated) and the hind wing even redder, more broadly darkened, than in the type form. Possibly yet another subspecies or even a distinct species.

7. *Carea longicornis* sp. nov. (pl. XXII, fig. 8).

Belongs to Section IV—A of Hampson.

♂, ♀, 40—42 mm.

Head, thorax, pectus, abdomen and legs somewhat as in *C. dione* Swinh. (*A.M.N.H.* [7] xv. 159 [1905] [*Khasias*]), of which this species may be a local race, but all shades rather deeper in tone, especially the thorax, which is reddish-purple mingled with greenish-brown; the anal segments of abdomen in ♂ distinctly tinged with red.

Fore wing coloured like the thorax but with the purple shades not so deep and showing in some lights a silvery sheen on the paler areas; marked nearly as in *dione* but the two lines scarcely as oblique and rather wider apart, the outer slightly more curved than in that species; costal edge paler than the rest of wing but hardly white.

Hind wing above and underside of both wings much as in *dione*.

S.W. Sumatra: Slopes of Mount Korintji, 7,300 feet, August-September, 1921, twelve ♂♂, four ♀♀.

Distinguished from *C. dione* chiefly by the much darker colour of thorax and fore wing and the greater distance between the lines on fore wing. Antennal ciliation appears slightly longer in *longicornis*, but this may be due to more perfect condition. The antenna itself appears

rather exceptionally long, even for a *Carea* species, reaching nearly to apex. Near also to *C. nitida* Hamps. ("Moths Ind.," ii. p. 423 [1894] [Sikkim]), from which it is distinguishable by the rather more erect lines in *nitida*.

8. *Carea egens* sp. nov. (pl. XXII, fig. 9).

Belongs to Section IV—A of Hampson.

♂, 46—48 mm.

Coloration nearly as in *longicornis*, but the thorax and fore wing duller, more brownish, the latter less contrasted than in that species and almost entirely lacking the silvery sheen.

Fore wing with a black cell-spot, two rather diffused straight dark lines crossing the disc, unusually near together and less oblique than in *longicornis*, a very diffused subterminal shade, interrupted at middle and less angled than in *dione* and *longicornis*; fringe not darker than the wing.

Hind wing much as in *dione*.

Underside yellowish-white, the fore wing more or less tinged with red in the cell and along costa and termen, the hind wing slightly irrorated with red along costa, at apex and on anterior half of termen. In one or two specimens the fore wing has a few white scales at apex and on fringe before tornus.

S.W. Sumatra: Slopes of Mount Korintji, 7,300 feet, August-September, 1921, five ♂♂.

In addition to the points mentioned above *egens* differs from *longicornis* in shape of fore wing, which is distinctly broader and has the termen well rounded in *egens*; in *longicornis* the fore wing is shaped exactly as in *dione*.

9. *Carea trichotmeta* sp. nov. (pl. XXII, fig. 10).

Belongs to Section IV—A of Hampson.

♂, 43 mm.

Abdomen, pectus and legs much as in *egens*; head and thorax dull greenish-orange tinged in parts with reddish.

Fore wing coloured like the thorax, but rather more tinged with red, especially towards termen; a fine black distal point; two moderately well-defined, rather oblique straight lines, the first from one-third costa to two-fifths hind margin, the second from two-thirds costa to four-

fifths hind margin; subterminal shade very slight, diffused, waved, but (apparently) not strongly angled.

Hind wing much as in *egens*.

Underside somewhat as in *egens*, but with the pale shades even less tinged with yellow and with more red on fore wing and on apex of hind wing.

S.W. Sumatra: North Korintji Valley, 5,000 feet, September-October, 1921, ♂—holotype only.

Distinguished from all other *Carea* species in this group known to me by the perfectly straight, equidistant and widely separated lines on the fore wing.

10. *Carea erectilinea* sp. nov. (pl. XXII, fig. 11).

Belongs to Section IV—A of Hampson.

♂, ♀, 40—47 mm.

Head, palpus, antenna and thorax predominantly chocolate-brown; abdomen above greyish-brown, with the first abdominal crest (in one ♂ with both abdominal crests) white, anal tuft, pectus, legs and abdomen beneath ochraceous, the legs shaded with brown.

Fore wing dull violet-grey, thickly irrorated with greenish-ochraceous except on medial area, with black cell-dot, erect, somewhat indistinct antemedial and postmedial lines (which are nearly obsolete at costa) and an erect, slightly waved, diffused subterminal shade, which has a tendency to become broken at middle; in the ♀ this shade is rather more waved and less diffused.

Hind wing pale pinkish-orange, with posterior third greyish-brown.

Underside of fore wing pale pinkish-orange (posteriorly whitish), with apex and fringe violet-grey and the cell and fold (to about two-thirds of wing) deeper, more greenish in tone, more thickly scaled. Hind wing with both shades paler than above, the pinkish area reduced to a slight shade along costa and a large apical patch, the two colours shading gradually into each other.

Perak, 2,000-3,500 feet (W. Doherty), ♂, holotype; Selangor: Bukit Kutu, April, 1915, ♀, allotype, presented to Coll. Joicey by the Raffles Museum. A ♂ from Negri Sembilan: Gunong Angsi, 2,000-2,700 feet, April, 1918, belonging to the Raffles Museum, is also before me.

Nearest to *C. trilineata* Warr. (*Nov. Zool.*, xix, p. 40 [1912] [Khasias]), but has the fore wing paler, more variegated, with the

lines more erect and rather more equidistant—the postmedian and subterminal rather farther apart than in *trilineata*.

11. *Carea adoza*, sp. nov. (pl. XXII, fig. 12).

Belongs to Section IV—A of Hampson.

♂ ♀, 36—38 mm.

Head and thorax predominantly dark purplish-red, about as in *obsolescens* Moore (*Trans. Ent. Soc.* 1884, 356 [Bombay]); abdomen pale fuscous (darker in ♀), the anal tuft ochre-yellow; pectus whitish, the legs shaded with yellow and dark red; abdomen beneath pale ochre-yellow with some red shading (especially laterally and anally).

Fore wing dark purplish-red with the fringe and a diffused band distally to the postmedial line brownish-red; a black cell-dot; two indistinct rather oblique lines, the first straight, from about one-third costa to near middle of hindmargin, the second slightly excurved, from about three-fifths costa to three-quarters hindmargin; subterminal shade sinuous, obsolescent.

Hind wing coloured nearly as in *obsolescens*, but with the fuscous shade broader and rather darker.

Underside of both wings rather more yellow than in *obsolescens*, with the red tones brighter, slightly more extended, especially on the fore wing; the distal half of costa and the fringe of fore wing ochre-yellow, the apex without the white irroration of *obsolescens*.

♀ with the lines on fore wing slightly more distinct and rather further apart than in the ♂.

S.W. Sumatra: Slopes of Mount Korintji, 7,300 feet, August-September, 1921, two ♂♂, one ♀.

Perhaps nearest to *C. obsolescens*, but the fore wing is rather more produced towards apex in *obsolescens* than in *adoza*.

12. *Carea phædropa*, sp. nov. (pl. XXII, fig. 13).

Belongs to Section IV—A of Hampson.

♂, 46—49 mm.

Head and thorax olive-brown, sometimes mixed with purple and dark red; abdomen ochre-yellow mixed with red above, deep red beneath; pectus and legs red, the fore and mid tibia and tarsus shaded with white, innerside of hind tarsus and the tuft of long hair yellow-ochre.

Fore wing typically olive-brown (sometimes mahogany or purplish-brown), irrorated with white, especially on (and posteriorly between) antemedial and postmedial lines, before termen and (slightly) near base, the medial white irroration sometimes continued almost to costa; a black cell-dot, proximally defined by white; antemedial line oblique, slightly sinuous, from two-thirds costa to near middle of hindmargin, distally dark-edged; postmedial proximally dark-edged, from four-sevenths costa to four-fifths hindmargin, twice excurved, as in *endophaea* Hmps. (*A.M.N.H.* [7] xvi, 596 [1905] [Travancore]), but with the curve behind R^2 larger; a subterminal dark shade crossing the white irroration, angled outward behind SC^5 and inward on R^2 , excurved to M^2 , obsolescent at tornus, usually more or less broken into spots. In one or two specimens an oblique blackish shade crosses the disc from the first curve of postmedial to antemedial line at middle of fold.

Hind wing cerise-pink, more yellowish-white at base, in fold and at abdominal margin.

Underside of fore wing red (except at hindmargin), with some apical white irroration. Hind wing reddish to M and M^1 , thence yellowish-white to abdominal margin; costa and distal third of interspaces from apex to R^2 irrorated with dark purple; the veins orange.

♀, 42—47 mm.

Thorax and fore wing typically nearly matching the typical ♂, but rather brighter (more ochraceous) with hardly any white irroration; in one ♀ the ground-colour of fore wing is deep purplish-red, corresponding to the dark ♂♂, but somewhat brighter.

Central West Buru: Gamoe 'Mrapat, 5,000 feet, March-April, 1922, seven ♂♂, six ♀♀.

Should probably follow *C. obsolescens* Moore (*Trans. Ent. Soc.*, 1884, p. 356 [Bombay]), according to the System of Cat. Lep. Phal: xi.

13. *Carea semipallida*, sp. nov. (pl. XXII, fig. 14).

Belongs to Section IV—A of Hampson.

♂, 42—45 mm.

Head and thorax dull brownish-red; abdomen above brownish-grey slightly tinged in parts with pink, the anal tuft white; pectus, legs and abdomen beneath yellowish-white with some brown shading and pink irroration.

Fore wing pale dull brownish-red, with a moderate-sized black cell-spot and indistinct greenish-brown lines, the first oblique, from one-third costa to near middle of hind margin; the second somewhat oblique, from about four-sevenths costa to four-fifths hind margin, slightly excurved behind costa and R^2 , angled on R^2 and incurved in fold; a macular dark subterminal shade, angled outward behind SC^5 and at R^3 angled inward before R^2 and obsolescent from M^1 to tornus; fringe blackish with a fine pale line at base; faint traces of an oblique dark shade across wing from costa near apex to near base of hind margin.

Hind wing yellowish-white with some brownish-grey hair at and before abdominal margin and slight traces of similar hair behind M ; the veins and termen irrorated with pale pink; fringe tipped with pink from apex to M^1 .

Underside of both wings whitish, the fore wing flushed with pale orange-red from costa to M and R^2 , with slight reddish irroration on termen behind R^2 ; the hind wing with slight pink irroration on costa and on termen to M^1 .

S.W. Sumatra: Slopes of Mount Korintji, 7,500 feet, August-September, 1921, three ♂♂. Another ♂ from the same locality in all probability belongs here, but costa and termen of fore wing appear slightly more curved and the fore wing is rather more orange in tone with the lines a little more distinct, the second line rather more strongly waved. Hind wing and underside with the red shade deepened in tone and increased in area; possibly a distinct species.

14. *Carea quieta*, sp. nov. (pl. XXII, fig. 15).

Belongs to Section IV—A of Hampson.

♂ ♀, 41—45 mm.

Head and thorax greenish-grey; abdomen greyish-fuscous with the anal tuft yellowish; legs and body beneath whitish shaded with greenish-grey (especially on breast) and sparsely irrorated with red.

Fore wing glossy dove-grey, shaded with greenish; the lines very slight, olive-green, the first oblique and very slightly waved, from one-third costa to two-fifths hind margin, the second rather strongly excurved before and behind M , from three-fifths costa to four-fifths hind margin; a black cell-dot; subterminal shade nearly as distinct as the other lines, distally angled behind SC^5 and at R^3 , proximally angled at R^2 . Hind wing posteriorly fuscous to near middle, anteriorly pale crimson-red.

Underside of fore wing red, with the costa and termen narrowly and the apex broadly brownish-grey. Hind wing pale reddish, with base and abdominal margin white.

S.W. Sumatra: North Korintji Valley, 5,000 feet, September-October, 1921, ♂ holotype, ♀ allotype; also one ♂ from slopes of Mount Korintji, 7,300 feet, August-September, 1921.

Should perhaps be placed next to *C. endephæa* Hampsn. (*A.M.N.H.*, [7], xvi., p. 596 [1905] [Travancore]), but does not seem very close to any previously described species.

15. *Carea mixticolor* Warr. ♂ (pl. XXII, fig. 16).

Didigua mixticolor Warr., *Nov. Zool.*, xxiii, p. 221, 1916, Penang, ♀. ♂, 35 mm.

Differs from the ♀ in the reniform lacking the green coloration and having the red bar less bright in tone; the fore wing is more thickly irrorated with red-brown than in the ♀, and the proximal half of costa is irrorated with green; the ♂ has the antemedial line better developed, bent outward from two-sevenths costa, erect from SC to middle of fold, thence sharply oblique to about three-fifths hind margin. On the underside the ♂ has a better-developed sub-terminal line, approximated to and nearly following the direction of margins of both wings, chiefly indicated by spots between the veins.

S.W. Sumatra: North Korintji Valley, 5,000 feet, September-October, 1921, one ♂.

Belongs to Section IV of Hampson; probably to IV—C (*Didigua*), but the hind legs are unfortunately missing in the ♂.

When more specimens from Penang and Sumatra are to hand it may prove that the above differences are racial rather than sexual.

OPHIDERINAE.

16. *Catephia rufostrigata* Beth.-Bak. *glabripars* subsp. nov.

♂, ♀, 43—50 mm.

Differs from typical *rufostrigata* Beth.-Bak. (*Nov. Zool.*, xiii, p. 251 [1906] [Brit. New Guinea]) in the hind tibia, which is typically strongly hairy on segments 1, 2 and 3, and shortly hairy on segment 4, but in subspecies *glabripars* is hairy only on segments 1 and 2, the hair on segment 2 being rather shorter than in typical *rufostrigata*. The

formation of the last tarsal joint appears to differ slightly in the two subspecies.

Seven ♂♂ and one ♀ belong to the name-typical form. The majority of ♂♂ are brown or blackish-brown; the markings indistinct with the exception of the dark reniform spot and a white postmedial bar on costa and (in nine specimens) a rufous patch crossing the postmedial line near costa; three or four ♂♂ have traces of a rufous patch on hindmargin from near base to postmedial line.

All but three of the ♀♀ show a more or less strongly-developed white band (sometimes shaded with greenish or ochraceous) proximally to postmedial line; in some specimens this band reaches to the antemedial line except for some dark shading at costa.

Central West Buru: Gamoe 'Mrapat, 5,000 feet; March-April, 1922, eighteen ♂♂, twenty-three ♀♀; Central Buru: Kako Tagalago, 2,700 feet, May, 1922, fifteen ♂♂, one ♀.

17. *Lasiopoderes pratti*, Beth.-Bak. ♀ (pl. XXII, fig. 5).

Lasiopoderes pratti, Beth.-Bak., *Nov. Zool.*, xiii, 263, 1906, ♂.

♀, 50—53 mm.

Legs normal. Hind wing unusually small in comparison with the fore wing but of normal shape and without the mass of flocculent scales which occupies the larger part of the underside in the ♂. Fore wing with the hindmargin straight, the termen strongly excurved and rather oblique but much less oblique than in the ♂. Palpus in both ♂ and ♀ upcurved, with the third segment about half the length of second, not dilated at extremity.

Fore wing unicolorous grey or greyish-brown, except in one aberration, which is irrorated with white to the subterminal line, the irroration interrupted here and there by lines of the ground-colour. Markings obsolescent, seeming to agree with the markings of the ♂, the very characteristic, distally-indented subapical pale reddish mark of the ♂ a little narrower and a little darker in tone (less outstanding) in the ♀, except in the white irrorated aberration (in which it is speckled with white scales), but having exactly the same proximal curve and distal angle as in the ♂.

Hind wing unicolorous greyish-brown.

Underside of both wings brownish-grey (not greyish-white as in the fore wing of ♂), with a very faint curved postmedial line traversing both wings, and a slight medial bar at costa of fore wing.

Dutch New Guinea: Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet. November, 1920, to January, 1921, three ♀ ♀.

Although differing superficially in many points, this appears to me to be almost certainly the true ♀ of *Lasiopoderes pratti*.

18. *Toxocampa costimacula* Gn. *avisignata* subsp. nov.

♂, 47—50 mm.

Differs from typical *costimacula* (*Toxocampa costimacula* Gn., "Spec. Gén. Léop.," vi, p. 429 [1852] [Silhet]) in the larger size, the rather larger antemedial costal dark spot and the more diffused discal spot of fore wing. On the hind wing the postmedial line is rather more dentate but less curved than in Indian specimens. On the underside the terminal dark band on both wings is interrupted by a pale subterminal band, which on the anterior third of fore wing is sharply defined, bent inward before and outward behind SC⁵. In Indian specimens in coll. Brit. Mus. the discal spot of fore wing above is scarcely joined to the medial costal dark spot, but this difference seems scarcely to agree with Guenée's description of the type. In Sumatra specimens these two spots are conjoined and, viewed from the front, form a mark somewhat resembling the head and neck of a bird.

S.W. Sumatra: Barisan Range, 2,500 feet, October to November, 1921 (C., F. and J. Pratt), five ♂ ♂.

A single ♀ in coll. Joicey from Sarawak is somewhat intermediate between typical *costimacula* and subsp. *avisignata*; somewhat nearer to the latter form except in size. A specimen in coll. Brit. Mus. from Singapore appears rather to agree with the type-form.

19. *Fodina sumatrensis* sp. nov. (pl. XXII, fig. 17).

♂, 44 mm.

Appears to agree in structure and coloration with *F. oriolus* Gn. ("Spec. Gén. Léop.," vii, p. 274 [1852] [Silhet]) except for the presence of some red hair on the fore and mid tibia and slight reddish lateral hair on abdomen in *sumatrensis*.

Crown of head and base of antennal shaft pure white. Thorax with two white lines, somewhat as in *F. stola* Gn. ("Spec. Gén. Léop.," vii, p. 275 [1853] [India]).

Basal area of fore wing marked nearly as in *stola* but with the dark patch behind costa almost matching the ground-colour of wing and

defined by sharply-marked fine white lines; oblique pale band, somewhat as in *stola*, but whiter, less proximally curved, with a dark line close to distal edge from R^3 to fold, the proximal edge ending in a white loop outlining a dark spot; termen of wing almost as in *oriolus*.

Hind wing with the dark border not quite as broad as in *oriolus*, broader than in *stola*, the posterior part of wing almost without dark shading.

Underside nearly as in *oriolus*, but hind wing with rather a broader, darker and more sharply defined dark border.

S. W. Sumatra: Barisan Range, Western Slopes, 2,500 feet, October-November, 1921 (C., F. and J. Pratt), ♂—holotype only.

SOME APPARENTLY NEW NOCTUIDAE FROM SUMATRA, NEW GUINEA, MEFOR AND BURU.

BY MISS A. E. PROUT, F.E.S.

(Plates XIII, XIV and XV.)

THE following species were collected for J. J. Joicey, Esq., by Messrs. C., F. and J. Pratt, during the years 1920 to 1922; all types are in coll. Joicey.

STICTOPTERINAE.

1. *Stictoptera polysticta* sp. nov. (pl. XIII, fig. 1).

♀, 48 mm.

Head and tegulae pale tawny-brown mixed with whitish; patagia chocolate-brown tipped with pale tawny-brown; palpus almost white, slightly browner above; dorsum of abdomen whitish with some brown hair on anal half; body beneath and legs whitish with some brown shading, the fore- and mid-tarsi banded with black.

Fore wing with the proximal half yellow-brown, the distal half whitish. White costal spots, bordered with deep red-brown, at origin of antemedial, medial and postmedial lines and three or four similar spots between postmedial line and apex; chocolate-brown patches at costa, in cell, in fold and before hindmargin, suggesting an oblique band from just before middle of costa to near base of hindmargin; a slightly oblique kidney-shaped reniform of the ground-colour, defined by white spots, except posteriorly; postmedial line and distal third of wing almost exactly as in *S. macromma* Snell.

Hind wing with the dark border very narrow—as in *S. variegata* Hampsn., or even narrower.

Underside of fore wing, costa and termen of hind wing pale yellow-brown, both wings with waved, diffused brownish-grey subterminal band; fore wing with medial and postmedial dark bars on costa; hind wing with slight cell-dot.

Dutch New Guinea: Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, November, 1920, to January, 1921, one ♀.

Apparently nearest to *S. macromma* Snell (*Tijd. v. Ent.*, xxiii, 87, pl. vi, t. 8 [1880] [Celebes]), with which it agrees exactly in shape; but as the forms of *macromma* from Khasis and the Moluccas seem to be identical it is hardly probable that *polysticta* is actually a race of *macromma*.

2. *Stictoptera bakeri* sp. nov. (Warr. MSS.) (pl. XIII, fig. 2).

♂, 39—42 mm.

Head speckled with black and white; palpus white beneath, blackish-brown above, with segment 3 more than three-quarters length of segment 2; tegulae whitish, banded with brown-orange, red-brown and pale violet-grey and tipped with red-brown; thorax with some whitish scales at middle, surrounded by orange-brown ones; patagia and dorsum of abdomen purplish-black; abdomen beneath, pectus and legs speckled with black and white, the legs banded with black and ringed with white on joints of tarsi.

Fore wing with proximal area to the antemedial line purplish-black, the distal area violet-grey more or less suffused with yellow-brown; a tinge of yellow-brown shading at base. Lines and reniform-mark nearly as in *S. swinhoei* Beth.-Bkr. (*Nov. Zool.*, xv, 199 [1908] Brit. New Guinea), but antemedial line bent inward from behind M, post-medial straight (not bent outward) from fold to hindmargin.

Hind wing very broadly clouded with fuscous, the hyaline area being reduced to a bar behind (and sometimes immediately before) M, scarcely reaching beyond end of cell.

Underside of fore wing blackish-brown with three or four white spots on distal half of costa and a waved postmedial line (as above). Hind wing nearly as above, but with black discal striga, slight, ex-curved medial and strong waved and ex-curved postmedial lines.

Dutch New Guinea: Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, November, 1920 to January, 1921, two ♂♂. Also a ♀ in coll. Joicey from Angi Lakes, 6,000 feet (A., C. and F. Pratt), March, 1914.

Nearest to *S. swinhoei* Beth.-Bkr. with which it seems to have been confused, but undoubtedly a distinct species. Specimens in coll. Tring Mus. are labelled *bakeri* Warr., but this appears to be only a MS. name.

SARROTHRIPINAE.

3. *Gadirtha albovenosa* sp. nov. (pl. XIII, fig. 3).

♂, 49 mm.

Antenna with fasciculate cilia to fully two-thirds of shaft, the cilia much curved, but, if straightened, would apparently be three or four times diameter of shaft; probably belongs to Section I of Hampson. Segment 3 of palpus nearly as long as segment 2, with strong rounded thickening at extremity.

Head, tegulae, thorax, palpus and antennal shaft dark brown, the tegulae with some paler, greenish-grey scales, the patagia with dark purplish-brown scaling; abdomen above and beneath, pectus and legs, dark brownish-grey, the legs with some browner shades.

Fore wing deep glossy brown, tinged in parts with ochraceous- or purplish-brown, and with a greenish shade along SC; markings blackish, rather obscure, with the exception of a silvery-grey apical spot, a sharply defined white subterminal line (bent outward at SC⁵ and slightly angled inward behind R¹), a white streak along distal two-thirds of hindmargin, pure white streaks to termen, on vein SC⁵ from subterminal line, on R¹ and M² from postmedial, on R² and M¹ from their origin and on SM² from base, a fine white streak in fold from base to middle of wing and a diffused white medial streak from fold to hindmargin. Subbasal line double, strongly excurved from costa to M, thence almost obsolete; antemedial line triple, oblique and waved, from about two-fifths costa to one-third hindmargin, the proximal line diffused; reniform somewhat as in *inexacta* Wlkr. (xiii, 1102 [1857] [Burma]), but more (irregularly) rectangular and without point on distal edge; postmedial line treble, somewhat as in *exacta* Semper ("Reise Phil., Schmett.," ii, p. 527, pl. lx, t. 6 [1900] [Philippines]), but evenly curved (not dentate), angled outward from behind M¹; a row of proximally brown-edged interneural black terminal spots: fringe with some pale reddish-brown shading round the white neural streaks, which are continued on to the fringe.

Hind wing somewhat as in *exacta* but less contrasted (proximally more tinged with grey), with a stronger dark spot at inner angle, and with a straight (very slightly waved) dark postmedial line from about R¹ to hindmargin.

Fore wing beneath nearly uniform greyish-brown, except for the usual pale inner area; hind wing whiter, with slight brownish-grey

4. *Risoba sticticata* sp. nov. (Warr. MSS.) (pl. XIII, fig. 4).

♂, 36 mm.

Head and thorax above green with some brown and black scales intermixed, the tegulae and patagia tipped with blackish; antennal shaft brown, palpus predominantly blackish but segment 2 anteriorly and posteriorly edged with green, segments 1 and 3 pale-brown shaded with black; abdomen above whitish, shaded with green and black, greener towards anus; pectus and legs whitish, shaded with pale-brown, green and blackish, the tarsi broadly ringed with black.

Fore wing white largely suffused with green and tinged in parts with yellowish-brown, the markings dark-brown; an outwardly oblique subbasal streak from near base of costa to middle of cell, where it widens to an elongate spot, a black basal spot behind M and a diffused dark spot near base of innermargin; antemedial line sharply defined and strongly waved from one-fourth costa to one-third hindmargin, bent outward and dentate from SC to fold, strongly bent inward from fold to before hindmargin, to which it is angled outward; a diffused medial streak from costa to just behind SC and a medial spot on M; reniform oval, dark outlined (the outline posteriorly thickened), with a black spot in centre; postmedial line fine, strongly waved, broken into spots on the veins from R^2 to SM^2 , and double at hindmargin, from two-fifths costa to three-fifths hindmargin, strongly bent outward behind costa, less strongly so between R^2 and M^2 ; some elongate spots beyond it on veins R^1 to M^2 and a slight one in fold; a sharply defined and distally white-edged brown subterminal shade, broad from SC^5 to R^1 and from M^2 to SM^2 and forming semitriangular interneural spots between veins R^1 to M^2 ; a brownish apical spot posteriorly followed by a large black spot behind SC^4 ; a row of white-edged interneural black terminal spots; fringe whitish tinged with green and chequered with black.

Hind wing white, with slight cell-spot, band-like dark shading on distal third, pale-edged black terminal spots and chequered fringe.

Underside of both wings white, tinged with greenish at costa, with

dark cell-spot, terminal blackish shading, chequered fringe and post-medial streak and medial spot on costa; fore wing also with black spot behind apex as above.

♀, 39 mm.

Paler green and less contrasted than the ♂ (but in less fresh condition), the lines less distinct; obliquely suffused with brownish from base of costa and subbasal streak to hindmargin between antemedial and postmedial lines, and posteriorly to postmedial line from M^2 to hindmargin.

Dutch New Guinea: Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, November-December, 1920, ♂ holotype; December, 1920, to January, 1921, ♀ allotype.

A ♂ in coll. Tring Mus. agreeing with the ♂ from Kunupi bears the name *sticticata* Warr., but this appears never to have been published.

5. *Risoba diphtheropsis* sp. nov. (pl. XIII, fig. 5).

♂, 38—44 mm.

Head black with large yellowish-white tufts above palpi and beneath antennal shafts; palpus black, the segments broadly edged with yellowish-white; thorax and patagia yellowish-white with a number of broad black dividing lines; abdomen yellowish-white above with a broad black dorsal streak (broadening at the divisions of segments), the small crests on middle segments yellowish-white; some black-edged lateral tufts (not usual in *Risoba*); anal tuft yellowish-white; body beneath and legs predominantly black, abdomen with a white medio-ventral streak, legs with pale bands or rings.

Fore wing yellowish-white with a latticing of irregular black lines—superficially recalling the genus *Dipthera*. Two broad subbasal lines from costa to M, approaching at middle and sometimes meeting to form a cross, becoming very indefinite behind M; two somewhat similar antemedial lines, but further apart, connected by bars before and behind SC, not forming a cross, continued as a single line behind M; an irregular (slightly variable) lattice-work of lines about end of cell, leaving a black-ringed white discal spot; a black bar from costa beyond discal spot; postmedial line double, united by bars on the veins, bent outward from about two-thirds costa, nearly erect from SC^5 to R^5 , inwardly oblique to behind M^2 and erect to three-fifths hindmargin; an extra line just beyond postmedial and a rather heavy subterminal line, bent inward to unite with the angle of the extra line from SC^5 to

R¹; a black terminal line and lines on the veins uniting the terminal line with the subterminal; an oblique black streak from apex; fringe yellowish-white with black streaks between the veins.

Hind wing creamy-white with a broad blackish border (about two-fifths across wing) more or less broadly interrupted by whitish at middle from before M¹ to fold and on termen behind SM², with subterminal pale spots on the veins from costa to R⁸; a rather broad, angled discal spot, almost joining a postmedial line from costa, which is nearly obsolete behind cell, usually showing as a black spot in fold; fringe chequered black and white.

Underside much like upperside but fore wing with the black shades less intense, rather more diffused; hind wing with the black markings sharper and darker than above, and with a row of sharply-defined whitish spots at termen.

Dutch New Guinea: Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, November-December, 1920, three ♂♂; also thirteen ♂♂ from the same locality and elevation, December, 1920, to January, 1921.

May probably really belong to a new genus, being very distinct from any *Risoba* species known to me and differing from Hampson's diagnosis of the genus or from *repugnans* Wlkr. (*Thyatira repugnans* Wlkr., ix, 9 [1856] [Punjab]) in the following particulars: segment 2 of palpus rather shorter than in *repugnans* (almost the same length as segment 1, which seems unusually long); segment 3 short (not "moderate"); antennal fascicles of cilia extending to barely two-thirds of shaft; thorax seems clothed entirely with scales; anal tuft divided in three (the lateral tufts shorter than central one); abdomen with short but strongly-marked lateral tufts; termen scarcely crenulate. In retinaculum, general build, length of antenna, etc., however, *diphtheropsis* agrees with the genus *Risoba*, so I place it there provisionally.

ACONTIANAE.

6. *Clethrophora angulipennis* sp. nov. (pl. XIII, fig. 6).

♂, 46 mm.

Coloration nearly as in *distincta* but thorax and fore wing darker, rather more bluish-green; abdomen deep brownish-red; the hind wing slightly deeper in tone, with less brown hair at abdominal margin than in *distincta*. Fore wing with the cell-dot very slight, the pale postmedial line distally edged with a broad diffused line of darker green

than the ground-colour; the subterminal obsolescent. Underside of both wings with the pale-reddish areas more irrorated with fuscous than in *distincta*, and the reddish-golden tones replaced by coppery-red. These last are omitted in Hampson's description, but cover all the fore wing beneath except narrow areas at costa, termen and hind-margin, and are present also in fold and at hindmargin of hind wing.

♀, 43 mm.

Differs from the ♀ of *distincta* much as the ♂ differs from the ♂ of that species. Underside of hind wing is altogether without the golden hair in fold.

South-west Sumatra: Slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♂, two ♀ ♀; North Korintji Valley, 5,000 feet, September-October, 1921, one ♀.

Can be easily distinguished from *distincta* by the shape of fore wing. Hind wing also appears a little narrower, especially in the ♀.

This and the following species both differ from *distincta* Leech (*Gonitis distincta* Leech, *Proc. Zool. Soc.*, 1889, p. 506, pl. lii, fig. 7 [Japan]) in having the termen of fore wing excised behind R^2 and slightly angled at M^2 . They also show no distinct abdominal crest, although the basal segments of abdomen are clothed with rough reddish hair with some dorsal green hair, which may indicate a rudimentary crest. In any case the species are undoubtedly congeneric with *distincta*, with which they agree exactly in general build and neurulation, as well as in colour-scheme and pattern.

7. *Clethrophora gonophora* sp. nov. (pl. XIII, fig. 7).

Shape and abdominal hair as in the preceding species but fore wing slightly narrower and more elongate.

Differs also in length of segments of palpus; in *angulipennis* ♂ and ♀, segment 2 measures about 2 mm., segment 3 only about 1 mm.; in *gonophora* ♂ and ♀ segment 2 measures about $1\frac{1}{2}$ mm. (or at the very outside $1\frac{3}{4}$ mm.), segment 3 measures well over 1 mm.

♂, 34—40 mm.

Thorax and fore wing intermediate in tone between the other two species; abdomen reddish-fuscous above, bright scarlet beneath, except for a broad pinkish-grey ventral line—in the other two species the scarlet shade is replaced by orange, which is more vivid in tone in *angulipennis* than in *distincta*; hind wing purplish-red, rather paler as well as less coppery in tone than in either of the other species; the

reddish patch at base of inner margin of fore wing extra large and conspicuous. Fore wing with a more or less distinct green antemedial line, outwardly oblique to M, thence inwardly oblique and angled in fold; black cell-dot moderately distinct; postmedial line dark (without the pale shade), diffused, obliquely curved; subterminal represented by dark dots on the veins, sometimes forming a more or less continuous line. Underside predominantly purplish-red, without bright hair on fore wing and in fold of hind wing.

♀, 35—42 mm.

Thorax and fore wing pale yellowish-green in tone; hind wing pale orange, whitish at base. Fore wing beneath much as in ♀ of *angulipennis*; hind wing whitish, anteriorly and distally irrorated with yellow-green; no red or orange hair either in fold or at hindmargin.

S.W. Sumatra: Slopes of Mount Korintji, 7,300 feet, August-September, 1921, eight ♂♂, twelve ♀♀. North Korintji Valley, 5,000 feet, September-October, 1921, two ♂♂, two ♀♀.

Easily distinguished by the small size, narrow fore wing and postmedial pale line.

It is just possible that this species may have to sink to *C. viridam* Heyl. (*Gonitis viridam* Heyl., *C. R. Ent. Soc. Belg.*, 1890, p. xxx [East Java]), which Hampson erroneously cites as a synonym of *distincta* Leech, but as there is nothing in the description of *viridam* but the size (32 mm.) to identify it as this species rather than as either of the others in the genus, and as the fore wing is said to be entirely without markings, it has seemed best to disregard the name until more material is to hand from East Java.

A single rather worn ♂ in coll. Joicey from Soekaboemi, West Java, appears distinct from all the above species, being somewhat intermediate between *angulipennis* and *gonophora*. In this specimen the outer line is most nearly as in *angulipennis* but a little nearer the termen than even in that species; it has also the coppery-red coloration of *angulipennis* on abdominal third of hind wing. In size, shape and general facies, however, it more nearly resembles *gonophora*. *Viridam* Heyl. may well be a unicolorous aberration of this species.

CATOCALINAE.

8. *Nyctipao albiangulata* sp. nov. (pl. XIV, fig. 2).

♂, 120 mm.

Androconical clothing apparently as in *N. albicinctus* Koll. (*Erebus albicinctus* Koll., Hügel's "Kaschmir," iv, 474, pl. xxii [1844]) (Sect. iii, B. (b) of Hampson) from which species it differs in the following particulars. In *albiangulata* the ground-colour above and beneath is slightly darker and more purplish; the discoidal stigma broader, filled in with and exteriorly broadly defined by black, leaving a narrow broken ring of ochraceous-brown, broadening to a comma-shaped head, which is edged by a white streak and two white spots and bears a third white spot on the head; the white postmedial line is strongly angled outward behind R^1 and R^2 and before hindmargin and is incurved between the angles; on the hind wing the white line is finer and rather more strongly waved than in *albicinctus* and the veins of terminal area are not streaked with white.

S.W. Sumatra: North Korintji Valley, 5,000 feet, September-October, 1921, ♂ holotype only.

It is probable that these *Nyctipao* species may ultimately be found to fall into a number of races of a few species, in which case this form will have to be known as *albicinctus albiangulata*; but in the absence of more definite knowledge it has seemed best to treat this very distinct form as a good species.

Nyctipao illodes Zerny (*Ann. Hotmus. Wien.*, xxx, 193, taf. v, fig. 14 [1916] [Java]) also belongs to this group of species (or subspecies), but in *illodes* the white line is rather broader and more acutely angled (especially on the hind wing) than in either *albicinctus* or *albiangulata*, and the discoidal stigma narrower than in either of the other species.

9. *Nyctipao meforensis* sp. nov. (pl. XIV, fig. 1).

Section III, B (e) of Hampson.

♂, 104 mm.

Head, thorax and abdomen much as in *bismarcia* Hmps. (*Cat. Lep. Phal.*, xii, 297 [1913] [New Britain]) but thorax darker (blackish-purple), collar narrowly yellow-brown.

Both wings glossy purplish-black, crossed by a yellowish-white postmedial band (narrower and whiter towards the costa of hind wing).

Fore wing with antemedial line excurved from scarcely one-fifth costa to about one-seventh hindmargin, bent inwards in cell and fold; medial line distally (narrowly) pale-edged, slightly bent inwards behind costa, then deeply excurved, strongly oblique behind the discoidal mark to scarcely two-sevenths hindmargin; postmedial pale band with proximal edge waved, distal edge somewhat dentate on and between veins on anterior two-fifths, more diffused on posterior three-fifths; subterminal white spots nearly as in ♀-figure of *bismarcia* (Cat. Lep. Phal., xii, pl. ccvii, fig. 2), but rather more strongly angled, distally edged by an angular, rather diffused band of yellowish-white irroration. *Hind wing* with medial line distinctly excurved round cell; postmedial band rather broader and deeper-toned than on fore wing; subterminal spots chiefly defined by proximal dark irroration and a fine distal dark line; terminal pale irroration rather less strong than on fore wing.

Underside of both wings grey-brown with excurved medial line; postmedial band and subterminal markings nearly as above. Hind wing with pale-edged dark discal spot.

Mefor Island, Geelvink Bay, Dutch New Guinea, August 15 to September 10, 1920, one ♂.

Nearest to *N. bismarcia*, but differs in the rather smaller size, darker tone of ground colour, direction of lines (especially the medial), etc.

10. *Speiredonia euphrages* sp. nov. (pl. XIV, fig. 3).

♂, 84 mm.

Antenna and palpus much as in *S. retorta* L. (*Noctua retorta* L., Mus. Lud. Ulr., 376 [1764]); head, thorax and abdomen much as in *retorta*, but the red on body apparently confined to anus of abdomen above, sparse lateral red hair on abdomen and some red hair on pectus (condition rather poor).

Wings above paler, more ochraceous-brown than in *retorta*; head of inverted-comma mark much reduced in size; the two postmedial lines on fore wing waved, evenly curved round cell, gradually approaching one another but distinct to hindmargin; subterminal lines nearly obsolete; hind wing with nearly straight, diffused postmedial and subterminal lines, dividing the wing into a dark inner area, a brown medial area and pale terminal area.

Underside of both wings ochraceous-brown, with three or four diffused brown lines, the outer postmedial being the best defined.

♀, 88—90 mm.

Body about as in *S. suffumosa* (*spirama suffumosa* Gn., "Spec. Gén. Léop.," vii, 195 [1852]).

Recalls a fine ♀ of *suffumosa*, but is darker, less tinged with greenish, with broader, more diffused black patches distally to the antemedial line and between the two postmedial lines towards hind margin; head of inverted-comma mark slightly broader and blacker than in *suffumosa*: postmedial lines curved and waved round cell much as in the ♂; two subterminal lines waved (but not dentate), with proximal black shading broadening to hindmargin. Hind wing with the lines broad, diffused and nearly straight (except two dentate terminal lines) and with a broad pale band distally to the outer postmedial line.

Underside with the medial line on both wings nearer the cell-spot than in *suffumosa*, on the hind wing angled at R^2 , then straight to hindmargin and with an additional faint line between medial and postmedial.

Dutch New Guinea: Nomnagihé, 25 miles south of Wangaar, south Geelwink Bay, 2,000 feet, January-February 1921, one ♂, one ♀; Wai Sai River, Weyland Mountains, 1,000 feet, June 1920, one ♀.

Should perhaps be regarded as a subspecies of *retorta*, but this difficult genus needs further elucidation.

11. *Phyllodes diversipalpus* sp. nov.

♂, 132—140 mm.

Differs from *P. eyndhovi* (*Voll. Tijd. v. Ent.*, ii, 86, pl. vi [1858] [Sumatra]) in the palpus having the scaling on segment 2 rounded (longest at middle), not "very broadly angled with scales in front at extremity," and in segment 3 being longer, gradually dilated from middle, not slender almost to extremity and ending in a rounded knob.

Fore wing more violet in tone than in *eyndhovi*, with the markings slightly more oblique—especially the reniform, which is paler, looking much as though laid on with thick white paint, with yellow shading in centre, outlined in burnt sienna, with slight sienna ring on its posterior end.

Hind wing a little blacker than in *eyndhovi*, with the yellow band paler, rather less incurved on posterior half of wing and broken by blackish hair on the veins (in the type specimen this hair is so thick as

nearly to obliterate the yellow shade towards the hindmargin; the other two ♂♂ seem in slightly less fresh condition).

Underside of fore wing of *diversipalpus* has the black area a little extended, the patches in and behind cell reduced in size. The hind wing has the whole posterior third blackish except where crossed by the pale band, which is straight-edged, only very slightly tinged with yellow (stronger in one specimen), not forming two orange, lozenge-shaped spots, as in *eyndhovi*.

♀, 144—156 mm.

Without the white reniform of the ♂; hind wing with the yellow band slightly broader. Fore wing beneath with the white patches rather larger than in the ♂; hind wing with the yellow shade slightly stronger.

Dutch New Guinea: Nomnagihé, 25 miles south of Wangaar, south Geelvink Bay, 2,000 feet, January-February, 1921, three ♂♂, three ♀♀.

Undoubtedly nearest to *P. eyndhovi*, of which it might almost be regarded as a large race were it not for the structural difference in the palpus. It is quite possible that, on account of this difference, Sir George Hampson might have placed *diversipalpus* in his genus *Xylophylla*; the difference does not, however, appear to me great enough to warrant generic separation.

12. *Dermaleipa joiceyi* sp. nov. (pl. XV, fig. 1).

♂, 80—90 mm.

Belongs to Section I of Hampson, but the fore wing is shorter and broader than in *D. juno* Dalm. (*Noctua juno* Dalm., "Anal. Entom.," 52 [1823] [Hub. Ign.]), with the termen more erect and rather more rounded; hind wing more rounded—not flattened or excised before anal angle.

Antenna, abdomen, pectus and legs nearly as in *D. juno*, but abdomen above with the red shades replaced by yellow, shading gradually into the scarlet of ventral surface; head and thorax darker, more chocolate or black-brown than in *juno*; palpus brighter scarlet.

Fore wing chocolate-brown, more or less irrorated and shaded with blackish; markings much as in *D. juno*, except the postmedial line, which is oblique to SC¹, thence oblique or slightly curved to middle of hindmargin, sometimes with traces of a diffused, dentate

black line beyond it, angled at R^1 ; posterior half of subterminal line more crenulate than in *juno*.

Hind wing somewhat as in *juno*, but the dark area more grey-brown and somewhat angled at R^1 , the bluish-white line narrow, nearly straight, the terminal area golden-yellow, with only the fringe (and sometimes the veins) tinged with scarlet.

Underside as in *D. juno*.

♀, 80—90 mm.

Usually more marked with blackish than the ♂; termen in all specimens and medial area in one or two distinctly paler, more contrasted. Hind wing with the posterior yellow shading extending into the cell at base, to M^1 near termen.

South-West Sumatra: Slopes of Mount Korintji, 7,300 feet, August-September, 1921, eighteen ♂♂, fifteen ♀♀; North Korintji Valley, 5,000 feet, September-October, 1921, fifteen ♂♂, eight ♀♀.

Near to *D. juno*, but the marked difference in shape, apart from other striking differences, makes it appear to me impossible to regard it as merely a subspecies.

DIPHTHERINAE.

13. *Dipthera androdes* sp. nov. (pl. XIII, fig. 11).

♂, 43—49 mm.; ♀, 49—53 mm.

Near to *champa* Moore (*Moma chama* Moore, *Proc. Zool. Soc.*, 1879, 403, pl. xxxiii, fig. 2 [Dharmasala]), from which it differs in the following particulars.

Hind wing of ♂ beneath with a thick patch of brownish-yellow hair in and behind cell, extending from base of cell to the almost obsolete postmedial line and from middle of cell almost to fold, along which there is a narrow streak of longer and somewhat paler hair; in ♂ and ♀ of *champa* this area appears to be clothed only with sparse, pale-yellowish hair, confined chiefly to M and not extending beyond end of cell, much as in the ♀ of *androdes*. Androconical hair on costa and inner margin is almost identical in the two forms.

The fore wing above (especially in the ♂) is purer white than in *champa*, often faintly tinged with bluish or greenish rather than with the slight pinkish or purplish sheen of *champa*. In *androdes* the sub-basal and antemedial markings are usually more interrupted, the medial costal bar is more erect and the postmedial lines appear slightly nearer termen than in *champa*, leaving a small area of the white ground colour

between the distal dark bar of the reniform and the proximal postmedial line. In *champa* the distal postmedial line has usually a large almost triangular spot at its origin on costa, which is slighter and more irregular in *androdes*. Varies much in the strength of the black markings, but the medial line is almost always the strongest.

In the ♂ of *androdes* the apex of hind wing is only very slightly irrorated with brown and is strongly iridescent, with greenish, bluish, pinkish or purplish reflections, according to the position from which it is viewed.

S.W. Sumatra: Slopes of Mount Korintji, 7,300 feet, August-September, 1921, seventy-nine ♂♂, forty-one ♀♀.

14. *Dipthera tamsi* sp. nov. (pl. XIII, fig. 12).

♂, 44—47 mm., ♀, 58 mm.

Head, thorax, abdomen and legs much as in *D. champa* Moore.

Fore wing silvery white, slightly tinged with pinkish or cream-colour; markings much as in *champa* but broader, much more heavily blackened, and differing in the following points: Antemedial line thickened in fold; orbicular black ring averaging rather larger and more elongate than in *champa*; the horizontal black streaks behind orbicular rather short and broad; space between reniform and inner postmedial line filled in with black, the line scarcely dentate; outer postmedial from a heavy, triangular patch at costa, proximally curved but *not dentate*, distally with thicker teeth than in *champa*; subterminal with strong black teeth fitting into the interspaces of the outer postmedial; terminal black spots on the veins lozenge-shaped. Hind wing above and under surface much as in *champa*.

South-west Sumatra: Slopes of Mount Korintji, 7,300 feet, August to September, 1921, twelve ♂♂, one ♀.

It is just possible that *tamsi* is a high elevation race of *champa* Moore, with which species it seems to agree in structure as well as in the main scheme of pattern; but it is a very distinct and (apparently) a very constant form, and all *Dipthera* species run so near to each other that it seems wiser for the present to treat each distinct form as a good species.

15. *Dipthera leucotaenia* sp. nov. (pl. XIII, fig. 13).

♂, 56 mm.

Coloration much as in *D. champa* Moore, from which species *leucotaenia* differs in the following points.

Size somewhat larger than in *champa*.

Fore wing in *leucotaenia* with the lines slighter (more broken) on proximal third; the orbicular ring rather smaller; the medial and inner postmedial lines not angled inward at costa but excurved, continuous, though thickened at costa; white band between the two postmedials broader, the inner postmedial being rather less sinuous, with the teeth short and broad; the teeth of outer postmedial scarcely joined into a connected line; black markings on veins at termen and on fringe usually a little heavier than in *champa*.

Hind wing of male darkened almost as in the female of *champa*.

Fore wing beneath with the hair in cell almost white (not yellow as in *champa*), and with two diffused postmedial lines on anterior two-thirds of wing. Hind wing with the terminal dark band extending to M^1 , the veins at termen darkened to M^2 ; medial and postmedial costal spots much thickened, the latter continued as a rather broad diffused line as far as posterior angle of cell.

♀, 63 mm.

Differs from the female of *champa* much as the male differs from the male. Hind wing above with the dark border continued to termen; the band equally broad beneath but hardly continued beyond M^2 .

Central West Buru: Gamoe Mrapat, 5,000 feet, March-April, 1922, three ♂♂, one ♀.

Possibly a subspecies of *D. champa*. It is just possible that *D. nigricatena* A. E. Prout (BULL. HILL MUS., i, p. 228 [1922] [Central Ceram]) is also a race of *champa*, but this latter form appears quite distinct.

OPHIDERINAE.

16. *Sypna lucilloides* sp. nov. (pl. XV, fig. 8).

♂, 58 mm.

Antenna with moderately long pectinations reaching to near apex, the apex simple. Palpus exceptionally long, about four times diameter of eye, with segment 3 as long as segment 2 and rather strongly dilated at extremity.

Palpus, head, thorax and abdomen above dark-brown with some paler reddish-brown scales intermixed; inner side of palpus pale ochraceous; pectus and legs reddish tinged with yellowish-white, the legs banded with black-brown; abdomen beneath greyish-brown, the three anal segments darker.

Fore wing coloured nearly as in *S. lucilla* Butl. (*Trans. Ent. Soc.*, 1881, p. 206 [Darjeeling]), but with more dark shading on the distal half of wing towards hindmargin. Basal pale shade and white spot in fold more sharply-marked than in *lucilla*; antemedial line strongly excurved and slightly waved, from two-ninths costa to two-sevenths hindmargin; a black outlined white orbicular spot; reniform pale, irregular, sharply-defined against the blackish proximal part of wing, very ill-defined on distal side; a pale, sharply-defined medial line from reniform to hindmargin, incurved at middle to near antemedial line; postmedial line indistinctly double, from a black bar at costa and with a diffused dark costal patch distally to it, strongly excurved and dentate round cell, with sharp angles on R^1 , R^3 , and M^1 , retracted to edge of pale medial band at M^2 ; a broad, strongly waved pale band from M^2 to hindmargin distally to postmedial line; terminal area nearly as in *lucilla*, but the subterminal line with more distinct proximal pale shading.

Hind wing darker than in *lucilla*, with the medial pale shade much slighter, scarcely defined except near costa; rather broader and more rounded—less produced at tornus—than in *lucilla*.

Underside with the markings nearly as in *lucilla* but with the medial line of hind wing rather more angled outward at M^2 —further removed from the two discal spots (which are a little larger than in *lucilla*); the general tone darker, more irrorated with black than in that species.

Dutch New Guinea: Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, December, 1920, to January, 1921, ♂ holotype only.

In the same antennal section as *S. lucilla*, but very distinct in the palpus and in markings of fore wing; differs also in shape of hind wing and in the somewhat more rounded termen of fore wing.

17. *Belciana kala* nov. (pl. XV, fig. 6).

♂, ♀, 45—50 mm.

Head and thorax light-green; antennal shaft, palpus, a band on tegulae and a tuft (or crest) behind tegulae brown; abdomen greyish-yellow, the dorsum with some brown hair and a series of deep chocolate-brown crests, the anal tuft green and brown; patagia and legs greyish-yellow, the fore and mid-tibia and tarsus outwardly banded with green and brown.

Fore wing green with a brown half-band between subbasal and antemedial lines, and the terminal area (from the postmedial line) predominantly brown; lines black, double, waved or slightly dentate and excurved; subbasal from costa to M, followed by a large black spot before hindmargin; antemedial from two-sevenths costa to two-fifths hindmargin; orbicular a black-outlined white spot; reniform 8-shaped, black-outlined, with a white spot in each division; medial line with the inner line thick and black, from near middle of costa to middle of hindmargin; postmedial from four-sevenths costa to three-quarters hindmargin, followed on anterior half of wing by a glossy-brown area only interrupted by terminal white spots and by the green subterminal line, which is much bent inward and proximally dark-outlined before SC^b; on posterior half of wing the brown shading is reduced to a more or less irregularly narrow band near postmedial line, and a spot at tornus: a black, dagger-like streak in fold from postmedial line to termen, varying in breadth and sometimes interrupted at middle; some large interneural black-outlined white spots on posterior half of termen; fringe chequered brown and green, with the brown predominating on anterior half of wing.

Hind wing yellow, with a diffused discal streak and a somewhat broad dark border (usually angled proximally at M¹), narrowing to a point at anal angle, where there are two pale-green spots, the second proximally succeeded by a brown spot; fringe brown, chequered with pale-green.

Underside of both wings pale ochraceous-yellow, shading to greenish-white towards termen, with two diffused, waved postmedial lines and chequered fringes. Hind wing with slight medial bar at costa, and discal streak; fore wing with very slight antemedial line and some post-medial dark clouding.

S.W. Sumatra: Barisan Range, western slopes, 2,500 feet, October-November, 1921, seven ♂♂, one ♀; North Korintji Valley, 5,000 feet September-October, 1921, one ♂, four ♀♀; slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♂, three ♀♀.

Seems to agree perfectly in structure with *biformis* Walk. (*Dandaca biformis* Walk., xv, 1671 [1858] [Sarawak]), the type of *Belciana* Walk., except in the more strongly developed abdominal crests, which agree better with *eurychlora* Walk. (*Dandaca eurychlora* Walk., 1670 [1858] [Canara]), the type of *Donda* Moore. In the hind wing also this species more nearly resembles *D. eurychlora* and *D. ornata* Moore (*Proc. Zool. Soc.*, 1883, p. 23, pl. iii, fig. 3 [Bombay]) than any *Belciana*

species known to me; but as the distinction between these two genera seems to me at best very slight and *Belciana* is the older name I employ it for *kala*.

18. *Belciana particolor* sp. nov. (pl. XV, fig. 4).

♂, 45—46 mm.

Antenna serrate to near apex, the serrations at middle of shaft almost short pectinations.

Vertex of head and thorax pale bluish-green with some yellow-green intermixed; face and tegulae pale orange-brown; abdomen whitish with the crests dark-brown; palpus, pectus and legs whitish, the palpus and legs with the usual brown and green shading.

Fore wing pale bluish-green largely suffused with yellow-green, nearly as in the typical form of *B. kenricki* Beth.-Bkr. (*Diptheroides kenricki* Beth.-Bak., Nov. Zool., xiii, 203 [1906] [Brit. New Guinea]); markings somewhat as in *kenricki*, but the orbicular larger, with a black spot in the middle, the white markings more yellow, the reniform black mark more erect and scarcely or not joining the bar from costa (which is smaller than in *kenricki*), the black lines in *particolor* much less distinct.

Hind wing coloured as in *kenricki*, but the dark shades reduced to a slight discal bar, an indistinct postmedial line (ending at M¹) and a narrow terminal band, which is more or less interrupted by yellowish-white before the black marginal lunules.

Underside somewhat as in *kenricki*, but with the blackish shades brown, obsolescent; the postmedial line of hind wing less angled.

♀, 46—50 mm.

Differs from the ♂ chiefly in the colour of thorax and fore wing, the green shades being much duller and largely replaced by pale pinkish-violet; the yellow markings of the ♂ tending to become cerise-pink.

Dutch New Guinea: Mount Kunupi, Menoo Valley, Weyland Mountains, 7,500 feet, November, 1920, to January, 1921, two ♂♂, seven ♀♀.

A single ♀ in coll. Joicey, from Angi Lakes, Arfak Mountains, 6,000 feet, having a similar orbicular, may possibly belong here, but the reniform seems intermediate between this species and *kenricki*, the fore wing is only slightly suffused with pinkish-violet and the dark tones of the underside are stronger and blacker than in *particolor*. Perhaps yet a third species.

In the ♂, *particolor* can be at once distinguished from *kenricki* by

ochraceous; the dark lines and shading heavier; the antemedial line very straight (though oblique) to behind SM^2 , bent inward at hind margin; the distal edge of the inverted comma head more angled than in *appollina*. Hind wing slightly more angled at M^1 than in *appollina* or *pretiosissima*; the dark shades stronger; medial and postmedial lines, especially, much thickened.

Underside of both wings more or less uniform ochraceous-buff (see Ridgway, pl. xv) with the exception of some greyish shades on proximal third and inner margin of fore wing, caused by the dark lines showing through from above. Both wings with dark discal spot and a double row of spots towards termen, those of the proximal row on hind wing being conjoined to form a waved line. On the fore wing three large spots represent the head of the inverted comma mark and three smaller ones the postmedial line. On the hind wing there are also three dark spots on the faint grey postmedial line.

Tanganyika Territory: District of the Great Craters. February to March, 1921, T. A. Barns, ♀ —holotype only.

NEW GEOMETRIDAE FROM DUTCH NEW GUINEA AND MEFOR ISLAND.

BY LOUIS B. PROUT, F.E.S.

(Plates XXIII and XXIV.)

THE GEOMETRIDAE DESCRIBED IN THIS PAPER WERE ALL COLLECTED
FOR MR. JOICEY BY MESSRS. C., F. AND J. PRATT.

Subfamily OENOCHROMINAE.

1. *Palaeodora subignea* Warr. ? (pl. XXIII, fig. 1).

55 mm.

Considerably larger than in ♂. Antenna bipectinate, but with the branches much shorter than in the ♂, those of the shorter (inner) series only about 1; as in the ♂, each branch is surmounted by a pair of shortish slender bristles. Abdomen very robust, pale-coloured.

Fore wing with apex slightly more produced than in the ♂; colours less vivid, more recalling the tone of *Parepisparis crenulata* or *Circopetes obtusata*; antemedian line slightly angled outward on fold; cell-mark expanded into a large, irregular, vitreous spot, its anterior part small and angled outward at R^2 , its posterior larger and more rounded; distal area less variegated than in the ♂, the only conspicuous spot being between the medians. Hind wing with the tooth at R^3 less produced than in the ♂; coloration less vivid; a rather large blackish cell-dot.

Underside similarly less bright than in the ♂, the median area of the fore wing, with part of the costal, almost as white as the hind-marginal; hind wing with a rather large black cell-spot.

Mount Kunupi, Menoo Valley, Weyland Mountains, December, 1920, to January, 1921.

In spite of the great superficial dissimilarity, I do not think there need be any hesitation in referring this interesting specimen here.

2. *Callipotnia allognata* Prout incerta subsp. nov.

♂, 42 mm.

Slightly larger than *allognata allognata*, the apex of the fore wing less acutely produced, the termen of the hind wing rather more rounded; colour a warmer brown; postmedian yellow line thicker; subterminal yellow line fairly strong and regular, scarcely filled in with dark spots proximally.

Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, November-December, 1920.

Perhaps a distinct species.

The brown hair patches on hind wing beneath are fairly thick and almost equal in length, one on M extending from origin of M^2 to bases of R^3 and M^1 , the second on M^2 , starting at its base, the third on and in front of SM^2 , about in alignment with the other two.

3. *Naxa craspedota* sp. nov. (pl. XXIV, fig. 5).

♀, 53 mm.

Head and body white, mottled with blackish. Antenna blacker than in *guttulata* Warr., the pectination scarcely so long. Legs predominantly grey.

Fore wing subdiaphanous white, with some scattered black-grey hair-scales as in the allies; markings formed of dense black-grey irroration, that of the proximal area strongly mixed with hair-scales; proximal area to 7 mm. at hindmargin, rather more anteriorly (its distal edge being rather oblique), costal to just across SC and distal to a breadth of 6 mm. (somewhat crenulate proximally) of the dark shade; cell-spot rather larger than in *guttulata*. Hind wing with cell-spot and distal border as on fore wing, the ground colour bluntly projecting into the border about R^2 .

Underside similar.

Nomnagihé, 25 miles south of Wangaar, 2,000 feet, January-February, 1921.

A most interesting discovery, the previous limit of the eastward range of the genus being Borneo. Quite near *guttulata*, differing in the darkened base and dark borders. The left hind wing shows a venational sport, R^2 being forked distally (for nearly half its length).

Subfamily HEMITHEINAE.

4. *Aeolochroma venia* sp. nov. (pl. XXIV, fig. 1).

♂, 41—42 mm.

Closely related to *prasina* Warr., structure and general coloration and markings nearly the same. Smaller, antennal ciliation perhaps slightly shorter. Abdomen beneath more ochreous, without the dark anterior shading of ♂ *prasina*.

Fore wing (as also the body) with the green shade more vivid, more yellowish; basal patch weak, posteriorly almost obsolete; median area broader posteriorly than in *prasina*, anteriorly green (only costally dark-spotted), posteriorly with the glaucous-whitish, dark-dusted shading much more extended than in *prasina*; the rufous-brown shade proximally to the subterminal rather strongly and uniformly developed from R^2 to hindmargin, gently incurved. Hind wing slightly rounder than in *prasina*, less produced tornally; as far as the postmedian line predominantly flesh colour, with some glaucous-whitish admixture, distally a little more variegated than in *prasina*.

Both wings beneath as far as the postmedian line without the dark suffusions of *prasina*, the hindmargin predominantly whitish, the rest of a rather uniform orange, except for small pale patch distally to the cell-spot of the fore wing; subterminal blackish shade of fore wing much less extended distally than in *prasina*; postmedian line of hind wing straight or almost straight.

Nomnagihé, 25 miles south of Wangaar, 2,000 feet, January-February, 1921.

5. *Aeolochroma chioneschatia* sp. nov. (pl. XXIII, fig. 9).

♂, 50—54 mm., ♀, 64 mm.

Face deep purple below, brown in middle, pale above. Palpus in ♂ $1\frac{1}{2}$, in ♀ almost 2; brown marked with deep purple. Antenna in ♂ pectinate to less than $\frac{2}{3}$, the branches rather short. Vertex, thorax and base of abdomen mottled purple and green, with some pale admixture, tapering to a point dorsally, leaving the end of the abdomen and most of the pleura and venter orange. Legs predominantly purple.

Fore wing in the ♂ green, somewhat olivaceous, in parts clouded with purple, in one or two examples predominantly purple; in the only known ♀ purple; base of costa mixed with whitish or very pale violet; a white apical patch, 5 or 6 mm. in extent at costa and reaching or

crossing R^1 at termen; coarse black irroration, in part confluent, leaving free the reverse edges of the antemedian and postmedian lines and some irregular subterminal patches; lines black, thickened at costa; antemedian excurved in and again behind cell; median strong costally, then merged in a narrow discal ocellus; postmedian forming short thick teeth outward, projecting distally to R^3 , strongly retracted behind M^1 ; some black proximal edging to the apical patch (especially in the ♀); a black subterminal shade (variable in development) posteriorly; terminal line subcrenulate, on the white patch olivaceous with black dots, posteriorly black; fringe anteriorly whitish with olivaceous spots, posteriorly green with black spots. Hind wing in ♂ heavily mixed with black as far as the dentate postmedian line, in ♀ concolorous with fore wing; abdominal fringe partly orange; an outwardly dentate, more or less interrupted, subterminal black shade; terminal line and fringe-spots black.

Underside deep blue-purple, in the ♀ becoming black distally; fore wing with cream-white apical patch, a large dark cell-spot, a pale spot immediately beyond this, and a small subcostal one just beyond the postmedian line or band, which is broad but not distinct anteriorly, narrow and evanescent posteriorly; hind wing with an extended cream-white costal patch and some slighter and more variable ones (in the ♀ prominent) at termen behind SC and near hind margin behind the position of the postmedian line; a more or less extended orange spot at hindmargin, extending on to the fringe.

Nomnagihé, 25 miles south of Wangaar, 2,000 feet, January-February, 1921, twenty ♂♂, one ♀.

A very fine species, akin to *purpurissa* Warr.

6. *Hypodoxa pallida* Joicey and Talb.

The hitherto unknown ♀ is similar to the ♂ but larger (ca. 48 mm.), the median area of the fore wing mixed with glaucous-whitish, the area between postmedian and subterminal lines on the hind half of the fore wing and nearly throughout hind wing mixed with violaceous-grey. Hind wing beneath with dark discal dash. Terminal joint of palpus longer than second joint.

Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, November-December, 1920, ♀, allotype; Nomnagihé, 25 miles south of Wangaar, 2,000 feet, January-February, 1921, three ♀♀, paratypes.

7. *Tanaorhinus unipuncta* Warr. *meforensis* subsp. nov.

♂.

Smaller than the name-type, fore wing with the median area concolorous or nearly so. Hind wing with the postmedian pale line obsolescent anteriorly, apparently thicker and more dentate than in the other races, rather thick and ill-defined posteriorly.

Hind wing beneath with the postmedian line weak or almost wanting.

Mefor, August 15 to September 10, 1920, three ♂♂.

To some extent intermediate between *rafflesi* Moore and *unipuncta*, suggesting that the latter may prove a race of the former.

8. *Dioscore ancyla* sp. nov. (pl. XXIV, fig. 9).

♂, 39—43 mm.

Palpus with the third joint quite short, mostly concealed. Antennal pectination short, the longest branches scarcely 3, more than one-half the shaft non-pectinate. Frenulum with the club small. Head and body green, the abdomen posteriorly mixed with white, beneath mixed with white. Hind tibia with hair-pencil moderate, mostly white.

Fore wing with R¹ stalked; celandine-green (pl. xlvii, b, in Ridgway), costal edge of fore wing inclining to pea-green, terminal area in distal half pale Nile-blue; a deeper green cell-dot; a greatly incurved white line from apex to hindmargin at about 3 mm. from tornus, proximally edged with yellowish-green; fringe yellowish-green. Hind wing rather elongate tornally, distal margin faintly waved, little convex, least so between SC² and M¹; M¹ about connate; concolorous with fore wing, at costal margin paler mixed; cell-dot minute; postmedian line straight, nearer to termen at abdominal margin than at costa.

Fore wing beneath with the pea-green shade extended, embracing most of the wing proximal to the postmedian line, only behind M and M² remaining pale, at hindmargin almost white; cell-dot weak; postmedian line weak, anteriorly almost obsolete, but developing a white apical spot. Hind wing with the line moderately distinct, especially its green element, which curves slightly away from tornus at its posterior end.

Nomnagihé, 25 miles south of Wangaar, 2,000 feet, January-February, 1921, three ♂♂.

9. *Anisozyga extravagans* sp. nov. (pl. XXIV, fig. 2).

♂, 37—40 mm.

Face green, narrowly pale below. Palpus over $1\frac{1}{2}$, terminal joint moderately elongate; light-brown, paler beneath, mixed with some green scales above. Vertex mixed with brown and (more sparingly) with green. Antennal pectinations short (about 1). Thorax and abdomen light buff, the patagia, tegulae, and first segments of abdomen dorsally green, the abdomen further with some dark-brown dorsal irroration, some green laterally and just before anal tuft; pencil beneath thorax green. Legs pale, the fore leg heavily spotted with blackish.

Fore wing with termen only weakly crenulate; grass-green, about as in *beatrice* Prout; costal margin pale ochraceous-buff, tinged (especially at extreme edge) with rufous and sprinkled with blackish scales; markings light-buff, antemedian line wavy, obsolescent except in cell; a small triangular patch at end of cell; an apical patch 6 mm. long, whiter at its proximal and distal edges, slightly dotted or spotted with green and blackish in middle, its proximal edge somewhat curved and with slight indentations on veins, its posterior edge straight, midway between R^1 and R^2 ; a smaller patch between hindmargin and fold, about 5 mm. long, terminating at tornus, edged anteriorly by some darker and redder scales; small pale dots at vein-ends; fringe mixed with green. Hind wing with costal margin and an extremely large sub-rotundate apical blotch pale, the latter occupying most of the wing (its diameter about 9 mm.), edged proximally and posteriorly with darker and redder scales, sparsely sprinkled nearly throughout with dark scales; termen with some black interneural dots.

Underside very pale watery green; fore wing with the subternal patch partly blackish, the rest nearly as above; hind wing with the large blotch blackish, except at termen.

♀ rather larger, palpus just over 2, the terminal joint being much longer than in the ♂. Fore wing with the pale blotches larger, the apical reaching to between R^3 and M^1 ; in addition, a basal patch 3.5 mm. in length. Hind wing with the large blotch as in the ♂; in addition, a small tornal blotch. Fore wing beneath with the dark tornal patch enlarged, narrowly confluent with an additional (sub-terminal) dark patch between the radials.

Nomnagihé, 25 miles south of Wangaar, 2,000 feet, January-February, 1921, five ♂♂, one ♀.

Between *veniplaga* Warr. and *beatrice* Prout.

10. *Anisozyga polyglena* sp. nov. (pl. XXIV, fig. 6). σ , 36 mm.

Face white, the upper half soiled with red-brown. Vertex white with some brown and black scales. Palpus brown, beneath white, on outer side (except third joint) with a black stripe. Antennal pectination short (little over 1). Thorax and abdomen white, the tegulae, patagia and anterior segments of abdomen spotted with green, the posterior segments with black. Legs mostly white. Pectoral hair-pencil white.

Fore wing with termen scarcely waved, venation normal, R^1 about connate; rainette-green (Ridgway, pl. xxxi, i), with fine white irroration and strigulation; cell-mark white; costa to 3 or 4 mm. broadly whitish with heavy admixture of black, then more narrowly whitish, less dark-mixed, distally pale-brownish with a little dark irroration; lines white; antemedian at about 5 mm., rather irregular, thickened at both ends, proximally accompanied at hindmargin by a brown-black patch; postmedian at nearly two-thirds, mostly slender and rather weak, but irregular, dentate outward on the medians, thickened into a large white spot at hindmargin; subterminal nearly 2 mm. from termen, connected therewith along most of the veins; some large conspicuous purple-black (through the lens brown-black, irregularly irrorated with violet-whitish) spots in distal area, namely one at costa (followed by a small one nearer the apex) and one at hindmargin proximal to the subterminal (the latter reaching the postmedian) and two distal to it between R^3 and M^2 ; fringe pale, tinged with green proximally, with brown distally.

Hind wing with termen moderately dentate; venation normal; cell-mark small and weak, dark-green; antemedian only expressed by the inner marginal spot; postmedian fairly strong, central; deeply inbent between R^2 and R^3 ; subterminal partly obsolete; no black spots proximally or at abdominal margin, the distal ones between R^3 and M^2 as on fore wing, the apical ones more numerous, more irregular, forming a constellation of four large and some smaller (partly confluent) on a large white apical patch.

Underside white-green, with the white markings indistinct, the black ones mostly strong, the apical on hind wing enlarged into a patch, the median ones on the same wing also enlarged, also confluent.

Nomnagihé, 25 miles south of Wangaar, 2,000 feet, January-February, 1921, two σ σ .

11. *Prasinocyma serratilinea* Warr. ultima subsp. nov.

♂, 35—39 mm.

On an average larger than the name-type, rather darker, with more definite shadings in the median area against the lines; cell-dots black; antemedian line of fore wing more shallowly lunulate-dentate, postmedian with still deeper indentation behind M^2 .

Mount Kunupi, November-December, 1920 (type and five paratypes); December, 1920 to January, 1921 (three paratypes).

Possibly a separate species.

12. *Prasinocyma minutipunctu* Warr. allocraspeda subsp. nov.

♂.

Differs from the name-typical form in having the fringes golden-yellow, only slightly mixed with green at the extreme bases; terminal dots rather strong.

Nomnagihé, 25 miles south of Wangaar, 2,000 feet, January-February, 1921, type.

Also occurs at Fak-Fak and in the Ninay Valley, but I have previously seen only indifferent specimens. In the Snow Mountains the form is somewhat intermediate, the fringes being tipped with pale yellow.

13. *Prasinocyma rudipunctata* sp. nov. (pl. XXIV, fig. 10).

♂, 41—45 mm.

Face green. Palpus almost $1\frac{1}{2}$, reddish-ochreous, becoming paler (whitish) beneath. Vertex and antennal shaft white; pectinations rather long and coarse, showing a tendency to curve, as in *Thalassodes*. Occiput green. Thorax and abdomen green above, white beneath. Legs white; fore femur red-brown above and on inner side, tibia and tarsus of a nondescript shade (tinged with brown and with olive); hind tibial hair-pencil rather strong.

Fore wing with SC^1 free, R^1 not or scarcely stalked, M^1 connate or just separate; light blue-green, about as in *latistriga* or a little brighter (slightly variable); costal edge very narrowly buff, then narrowly tinged with reddish; cell-dot black, fairly large, inclining to be obliquely elongate; lines white; antemedian faint at costa (about 4 mm. from base), gently excurved and slightly oblique in its general course, but with a very feeble concavity about fold to SM^2 ; post median obsolete at

costa, at first 6 or 7 mm. from termen, mostly slightly nearer thereto, somewhat undulate, with the most noticeable inward curves at folds; termen with small but sharp black dots; fringe light ochreous-buff. Hind wing bluntly bent at R^3 ; cell-dot large, rather irregular, more or less elongate; antemedian weak, angled near abdominal margin; postmedian rather protrusive at R^3 to M^1 , thence rather deeply dentate to abdominal margin.

Underside whitish-green, deeper costally on fore wing, costal edge ochreous-buff, then greyish; terminal dots as above; fringes rather paler.

Mt. Kunupi, Menoo Valley, Weyland Mountains, November-December, 1920, type and five other ♂♂; December, 1920, to January, 1921, one ♂, two ♀♀.

14. *Prasinocyma philocala* sp. nov. (pl. XXIV, fig. 3).

♂, 31 mm.

Head green, with a broad white fillet between the antennae. Palpus rather short, beneath white. Antennal shaft white, pectination rather long. Body green above, white beneath; the abdomen with a white dorsal line. Legs white, the fore leg green above; hind tibia with strong white hair-pencil.

Fore wing with apex moderately sharp, termen almost straight, not very strongly oblique; SC^1 anastomosing very shortly with C; of nearly the same delicate blue-green as *coerulea* Warr., becoming a rather more decided green about C and SC; costa narrowly white at extreme edge, then narrowly tinged with light brown; lines represented by white vein-spots, the antemedian forming a large one on base of M^2 and a second almost equally large on SM^3 , the postmedian almost parallel with termen (at about 4 mm.), mostly small, the one on R^3 larger and (almost inappreciably) more proximal; cell-dot very feebly indicated in darker green; a fine, not conspicuous brown terminal line; fringe whitish. Hind wing with termen gently curved, not strongly convex, not angled at R^3 , tornus consequently appearing acute; marked (except costally) as fore wing, but with the postmedian series of dots arcuate.

Underside whitish-green, the fore wing brighter green anteriorly, its costal margin nearly as above; lines (including the terminal) obsolete; fringes white.

Mt. Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, December, 1920, to January, 1921.

The first-known species to combine the colour and maculation of *coerulea*, *glaucia*, etc., with the dorsal line of *punctulata leucogramma* or the *gigas* group.

15. *Prasinocyma tryphera* sp. nov. (pl. XXIV. fig. 7).

♂, 29—30 mm.

Face green. Palpus nearly $1\frac{1}{2}$; green, beneath white. Vertex and antennal shaft white; pectination 4 or 5. Occiput green. Thorax and abdomen green above, white beneath. Legs mostly white; fore coxa green; hind tibia with moderate white hair-pencil.

Fore wing with costa arched distally, apex moderate, termen straight; SC¹ free (type), or anastomosing slightly with C, R¹ connate or slightly stalked, M¹ not stalked; delicate blue-green as in *delicata* Warr., or *punctulata* Warr.; costal edge buff, mixed with grey; cell-dot minute, black; lines whiter than ground colour, but almost obsolete, formed and placed nearly as in *punctulata*; terminal black dots very minute and inconspicuous, easily overlooked; fringe white, tinged with cream-colour. Hind wing moderately ample, very feebly bent at R³; R¹ and M¹ both stalked; first line wanting (?), the rest as on fore wing.

Both wings beneath green, the fore wing in posterior half and a great part of the hind wing proximally becoming whiter.

Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, November-December, 1920, and (type) December, 1920 to January, 1921, two ♂♂.

16. *Prasinocyma annexa* sp. nov. (pl. XXIV, fig. 11).

♂ ♀, 38—40 mm.

Face green. Palpus in ♂ $1\frac{3}{4}$, in ♀ $2\frac{1}{2}$, third joint elongate in both sexes, especially in the ♀; second joint green above, white beneath; third joint red-brown. Vertex white, occiput green. Antennal shaft white, branches green, at least at extremities. Thorax and abdomen green above, white beneath. The fore leg tinged with red-brown above, especially on femur; hind tibia of ♂ with rather strong hair-pencil.

Wings with the shape, colour and markings almost as in *vestigata* Warr., the dots on the veins stronger, especially on SM² of the fore wing, where the enlargement of the postmedian even begins to recall that of *simplex*, *dioscorodes*, *marina*, and *glaucia*.

Mount Kunupi, Menoo Valley, Weyland Mountains, November-

December, 1920 (five ♂♂), December, 1920 to January, 1921 (type and two other ♂♂, allotype ♀).

Differs from *vestigiata*, apart from the lines, in the rather longer palpus, absence of white dorsal dots of abdomen, larger size and perhaps slightly brighter colouring; from *sororcula* Warr., and *fraterna* Warr., in the palpus, the dotted lines, the fringes, etc. Occurs also with *vestigiata* at Mount Goliath: one ♂ and two ♀♀ had been put aside at the Tring Museum for investigation.

17. *Prasinocyma pratti* sp. nov. (pl. XXIV, fig. 4).

♂, 38—39 mm.

Face slightly loose-scaled, green. Palpus 1½, third joint nearly half second joint; ochreous, mixed (especially proximally) with green. Antenna ochreous. Vertex and occiput green. Thorax above green, beneath white, in front of fore coxa green. Fore leg above largely black-grey, pale at extremities of joints; hind leg whitish-ochreous, the tibia only moderately dilated, the hair-pencil rather slender. Abdomen above green, beneath white; each segment with a triangular ochreous dorsal spot, its apex directed forward, its anterior part finely dark-edged, its posterior becoming whiter.

Fore wing with apex acute, termen subcrenulate, SC¹ free, M¹ almost connate; green; costal edge deep ochreous, dotted with blackish; cell-dot deep-green; lines pale-ochreous; antemedian 4 mm. from base, deeply lunulate outward in cell, in submedian area, and behind SM², thickest at ends of the lunules; postmedian zigzag, from SC⁵ about 3 mm. from termen to hindmargin about 4 mm. from tornus, obsolete between a spot on SC⁵ and one on R¹, thence with the outward teeth on the veins, a deep inward curve between M² and SM²; fringe ochreous, deeper proximally than distally and with black-brown dots at ends of veins and of submedian fold. Hind wing with termen crenulate, slightly angled at R³; SC² very shortly stalked, M¹ about connate: nearly as fore wing except costally, but with antemedial line wanting.

Underside whitish green, unmarked; costa of fore wing and fringes as above.

Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, December, 1920 to January, 1921, two ♂♂.

A rather anomalous species, with somewhat the facies of a *Dioscore*.

18. *Prasinocyma inturbida* sp. nov. (pl. XXIV, fig. 8).

♀, 26 mm.

Face green, shading off to white below. Palpus short ($1\frac{1}{2}$), rather slender, terminal joint short but distinct; green, beneath whitish. Crown and antenna green. Thorax and abdomen green, beneath white. Legs white, the fore leg mostly green on upper and inner side.

Fore wing with apex pointed, termen gently subcrenulate; SC¹ anastomosing shortly with C, and at a point with SC², R¹ shortly stalked, M¹ connate; subtranslucent whitish green, closely irrorated with deeper blue-green scales and with a few lustrous white ones; costal fringe proximally unusually long, green; costal edge beyond this very narrowly buff, mottled with brown; cell-dot black; lines diffuse, not strong, merely formed of somewhat denser irroration, weakly pale-edged on their reverse sides; antemedian from two-sevenths costa, rather strongly excurved at both folds, thus with proximal angles on the veins; postmedian at about 3 mm. from termen, receding anteriorly to R¹, lunulate-dentate throughout; fringe pale-green. Hind wing with abdominal margin only moderately elongate, termen crenulate, with a stronger tooth at R³; cell-dot and postmedian line nearly as on fore wing.

Underside paler, the markings faintly showing through.

Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, November-December, 1920.

Like a few other *Prasinocyma* (e.g., *tripuncta* Prout, to which it is probably related) this species is almost a "*Chlorocoma*" by the palpal character.

Subfamily GEOMETRINAE.

19. *Milionia megadema* Roths. and Jord. *ptochica* subsp. nov. (pl. XXIII, fig. 12).

♂ ♀.

Band of fore wing much narrower than in *megadema megadema* measuring at its widest part only 5 or 6 mm., and usually tapering slightly anteriorly. Usually also (three ♂♂, two ♀♀) the band is orange instead of red. The two ♀♀ in which it remains red may be named *ab. euchroma* *ab. nov.*

Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet,

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November-December, 1919 (three ♂♂, three ♀♀), and December, 1919, to January, 1920 (one ♀ of ab. *euchroma*).

M. aroensis Roths., which is evidently also closely related, shows the same dichromatism (as do several other species likewise); it differs, however, apart from the narrow band—which may vary if the (to me unknown) specimen described by Thierry-Mieg as *scintillans* is really a mere aberration, as I rather suspect—in the extended blue of the upper surface.

20. *Milionia eutyches* sp. nov. (pl. XXIII, fig. 2).

♂, 55 mm.

Eye hairy. Antennal ciliation 1. Hind tibia dilated, with strong hair-pencil. Head and body black, mixed with blue, which is brightest and most greenish on face, tegulae and patagia, but varies, as in the allies, according to the incidence of the light.

Fore wing moderately elongate, scarcely so much so as in *arfaki* Beth.-Bak., and *aglaia* Roths. and Jord.; black, shot in distal half with deep-blue; a bright-blue, somewhat iridescent subbasal patch between M and hindmargin, distally encroached upon by red scales on SM² and hindmargin; a more restricted hindmarginal red patch beyond it, scarcely crossing SM²; an orange band much as in some forms of the variable *arfaki*, and which may in a series prove equally variable; this does not quite reach costa, is 5 mm. wide anteriorly, 2.5 mm. from fold to hindmargin, its distal edge very gently curved, not quite reaching end of cell, its proximal edge almost straight and very oblique from SC to fold, its hinder end strongly overlaid with red. Hind wing black, shot with deep blue; band of fore wing continued but narrowly, from costa to R' orange, anteriorly with some black irroration, from R' to its end at SM² predominantly red, behind R' excurved, behind M² narrowing, at its end scarcely 1 mm.

Underside with the band of both wings broader, orange; that of fore wing straighter, distally reaching DC, that of hind wing with a rather broad and deep proximal indentation between the radials.

Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, December, 1920, to January, 1921.

Differs from the closely allied *arfaki* in being larger, the band of fore wing more curved, that of hind wing more bent, both broadened beneath, the abdomen dorsally with the blue reflections darker and less

strong. The same points, excepting size, distinguish it from *aglaia* Roths. and Jord. (*Nov. Zool.*, xii, p. 468).

A specimen which is almost certainly the ♀ is rather larger (59 mm.), the blue and red proximal patches of fore wing merged into a large and uniform red patch, the band almost uniform orange-red, that of hind wing broader (and broadest in *posterior* half), less bent.

21. *Milionia diva* Roths. *constans* subsp. nov.

♂.

Similar to form *b* of the name-typical race—fore wing with a large red triangular area. This area is, however, in general broader, its extension from SM^2 to hindmargin 4—5 mm. in width; the black patch at base and hindmargin is, after the basal 3 mm., bordered anteriorly by SM^2 , whereas in *diva diva* it crosses that vein at its distal end or very near thereto.

Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, December, 1920, to January, 1921, type and six paratypes; also one ♂ from Menoo River, 3,500 to 5,000 feet, November-December, 1920.

One of the Mount Kunupi series is an ab., with the red reduced, and might be mistaken for a British New Guinea specimen, but this clearly does not affect the validity of the race.

22. *Milionia carycina* sp. nov. (pl. XXIII, fig. 10).

♂ ♀, 42—47 mm.

Eye hairy. Antennal ciliation of ♂ very short. Head and body black-brown, more or less mixed with metallic blue, especially on face, patagia and tegulae. Hind tibia of ♂ dilated, with hair-pencil.

Fore wing brighter red than in *rubra* Joicey and Talb. (*Ann. Mag. Nat. Hist.* [8], xv, p. 296, t. 12, fig. 2), proximally almost blood-red, distally more tinged with vermilion, sometimes (but perhaps not in perfectly fresh specimens) mixed with orange; base narrowly black; hind marginal area generally black proximally, to a variable extent, but oftenest quite narrowly, almost always tapering off gradually, whereas in the very similar *diva constans* it nearly always falls away steeply from SM^2 to hindmargin; a black apical border, at costal margin about 9—10 mm. broad, its proximal edge very gently curved and running obliquely outward so as to reach hindmargin about

submedian fold or at tornus, in the former case with a thread-like marginal continuation to tornus; fringe black, shot with blue. Hind wing black, basally and posteriorly with blue reflections, which are less vivid but more diffused than those of *diva* Roths.; fringe less black, with slight blue reflections.

Underside nearly the same; hindmargin of fore wing paler—more greyish or brownish proximally, then more yellow; hind wing with a short metallic-blue costal streak at base.

Weyland Mountains: 5,000 feet, June, 1920, one ♀; Mount Kunupi, 6,000 feet, November, 1920, one ♀; November-December, 1920, two ♂♂, one ♀; December, 1920 to January, 1921, three ♂♂, three ♀♀, including the holotype ♂, and allotype ♀; Menoo River, 3,500-5,000 feet, December, 1920 to January, 1921, five ♂♂.

Distinguished at once from *diva* by the much shorter antennal ciliation, as well as by the less broad black apical region; from *rubra* not only by the tone but also by the form of the black apical region, which does not, as in that species, run basewards along the costa. A short series from the Wandammen Mountains also collected by the Pratts, has hitherto been mixed in Mr. Joicey's series of *rubra*, which is at present only known from the Angi Lakes.

23. *Milionia semirutila* sp. nov. (pl. XXIII, fig. 6).

♀, 38 mm.

Eye not hairy. Head and body black, the abdomen more greyish, especially beneath and posteriorly, towards the extremity mixed with a few dull orange scales.

Fore wing not greatly elongate, costal margin gently curved, termen scarcely oblique anteriorly; cell not quite one-half; black with a broad oblique orange-red band, occupying about one-third of costa (scarcely proximal to the centre), of uniform width throughout, reaching abdominal margin but separated from termen (from M^2 to tornus) by a black thread; fringe black. Hind wing black, with a slightly less broad orange-red submarginal band, separated from termen by a very narrow black border, which is broadest at about SC^5 to R^8 but tapers to a point at tornus; fringe black.

Underside the same.

Weyland Mountains, Dewaro Village, 3,500 feet, June, 1920.

Perhaps in some measure transitional to the genus (or section?) *Automolodes* Warr., but with the hind wing quite differently shaped.

24. *Craspedosis inquisecta* sp. nov. (pl. XXIII, fig. 3).

♀, 48 mm.

Head black, the face and vertex tinged with blue. A very small tuft at lower extremity of face. Antennal ciliation approaching 1. Thorax blue-black, above mixed with white; tips of patagia white. Abdomen black, with light-orange belts, which ventrally suffuse almost the entire surface. Legs black-grey, the tarsi paler, tinged with orange-brown.

Fore wing with fovea strong, white; costal margin black; a black distal border of about 4 mm. width, shading into blue-grey on meeting the ground-colour; an extended blue-black area (irregularly irrorated with white) from base of inner margin to beyond extremity of cell, connected with distal border by streaks along SC^5 (confluent with the black costal border), R^3 and M^1 ; blue-grey teeth from the black distal border projecting proximad on R^1 , M^2 and SM^2 . Hind wing white; costal margin blue-grey, distal border black; a blue-grey extension from the costal border, running proximal to the distal border as far as radial fold and resumed between M^2 and tornus; a large sugar-loaf-shaped intermediate projection (from radial fold to median interspace), just entering posterior corner of cell.

Underside similar, the blue-black parts darker.

Weyland Mountains, Dewaro Village, 3,500 feet, June, 1920 (C., F. and J. Pratt) type; Wai Sai River, 1,000 feet, June, 1920, paratype.

♂. Quite similar, such minute deviations as can be observed in the markings being obviously individual, not sexual. Wings very slightly narrower, antennal ciliation fully 1.

Nomnagihé, 25 miles south of Wangaar, 2,000 feet, January-February, 1921, allotype, received subsequently to the preparation of the above description.

25. *Craspedosis flavidistata* sp. nov. (pl. XXIII, fig. 4).

♀, 37—41 mm.

Close to *flavimedia* Warr., of which it might even prove a subspecies.

Fore wing with an appreciable admixture of reddish-brown in the black ground-colour, beginning to approach *scordylodes* Joicey and Talb.; the yellow band, which varies slightly in width (from 3.5—4.5 mm., on an average narrower than in *flavimedia*), more distally placed—about three times as wide outside the cell as within it (in

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flavimedia more than half the width is within the cell), and running to distal instead of to hindmargin, its posterior boundary being at submedian fold.

Mount Kunupi, Menoo Valley, December, 1920, to January, 1921, type ♂, allotype and paratype ♀; November, 1920, paratype ♂; Menoo River, 3,500-5,000 feet, November-December, 1920, one ♂; December, 1920 to January, 1921, two ♂♂; also one ♂ from the same district without exact data.

That this cannot be a less rufescent form, with differently shaped band, of *scordylodes* Joicey and Talb. (of which the type remains unique) is shown by the fact that the latter has the terminal joint of the palpus longer.

26. *Craspedosis effusa* sp. nov. (pl. XXIII, fig. 8).

♀, 42 mm.

Face grey, narrowly whiter above. Vertex grey, paler between the antennae. Thorax and abdomen above dark-grey, beneath (with legs) rather paler; in places shot with blue; tip of abdomen bright ochreous.

Fore wing moderately broad, termen rather strongly oblique; black-grey with a slaty tinge, in some lights with fairly strong blue reflections; a broad (ca. 6 mm.) white band from SC to hindmargin, its proximal edge about 4 mm. from base anteriorly, about 5 posteriorly, its distal edge fairly straight except behind SM² (where it curves inward) traversing DC²⁻³; fringe paler grey. Hind wing with the blue gloss rather stronger; the white band of fore wing continued at costal margin only about to R' but becoming progressively more dusted with the ground-colour; fringe white.

Underside similar.

Nomnagihé, 25 miles south of Wangaar, 2,000 feet, January to February, 1921.

The white band of the fore wing, even more markedly than in *semilugens* Warr., *swinhoei* Roths., etc., shades into the ground-colour proximally and distally through a narrow area of irroration; in this respect a contrast to the larger, blacker *affinis* Roths., from which it further differs in the unicolorous dorsum of abdomen and the white costal band and fringe of hind wing.

27. *Craspedosis uniplaga angustiplaga* subsp. nov.

♂, 40 mm.; ♀, 46 mm.

Smaller than *uniplaga uniplaga* Warr. (1896, Fergusson Is.).

Fore wing with the white band narrower (especially in the middle), straighter, its distal edge less convex, its proximal not sinuous posteriorly. Hind wing with the white patch more truncate proximally, the black basal area in consequence relatively a little larger.

Mefor, August 15 to September 10, 1920. Type and allotype in coll. Joicey. A pair in coll. Tring Museum confirm the validity of the race; the ♀, though more nearly equalling that of *uniplaga uniplaga* in size, shows all the other distinctions of the ♂.

28. *Craspedosis galathea* Warr. *weylandensis* subsp. nov.

♂, 41 mm.; ♀, 47–52 mm.

Differs from *galathea galathea* Warr. (*Nov. Zool.*, v, 33, Kapaur) in having the white markings reduced, the subterminal series entirely wanting. Fore wing with the white basal area between M and hind margin more or less broadly divided by black along SM². Typically also the white spot in cell almost obsolete, that at base of medians entirely so, but the ♀ from Mount Kunupi approaches Warren's form in these latter particulars.

Wangaar River, 15 miles from coast, ca. 600 feet, January, 1921, type ♂; Nomnagihé, 25 miles south of Wangaar, 2,000 feet, January-February, 1921, allotype ♀ (52 mm. expanse); Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, November-December, 1920, ♀ ab.

29. *Bordeta bursadoides* Warr. *superior* Prout ab. *deannulata* ab. nov.

♀, 41 mm.

Tegulae not appreciably pale. The pale colour on pectus and fore coxa greatly restricted.

Abdomen dorsally black, without even the single orange belt of ab. *uniannulata* Warr. (*Nov. Zool.*, xvi, p. 127).

Fore wing with the oblique orange band moderate (no doubt more or less variable, as in all the forms). Hind wing with the black borders ample, continuing (though in part very narrowly) along abdominal margin.

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Nomnagihé, 25 miles south of Wangaar, January-February, 1921, type; Mount Kunupi, 6,000 feet, December, 1920, to January, 1921, paratype.

May possibly prove a local or seasonal form, but as the form *superior* Prout prevailed in the Weyland Mountains, it seems more probably a mere chance that the two taken on the second expedition differ so markedly therefrom.

30. *Eucharidema apora* Prout plesiozona subsp. nov. (pl. XXIII, fig. 11).

♂, 48 mm.

Abdomen with the anal tuft not lighter than the rest.

Fore wing with the white band differently formed, not so oblique proximally as in *apora apora*, being about 10 mm. from base at margins, its distal edge straightish to M^2 , at which vein it has widened to 4.5 mm., then suddenly incurved so as to narrow it to scarcely 1.5 mm.; traces of a bar from the angle on SM^3 to tornus, thus reversing the proportions common in the female of *apora apora*. Hind wing with the band reddish-orange, farther removed from termen than in *apora apora*, quite short, running from the radial fold to the submedian one, tapering from nearly 2 mm. to a point.

Nomnagihé, 25 miles south of Wangaar, 2,000 feet, January-February, 1921, one ♂.

31. *Paralcis tmetoloba* sp. nov. (pl. XXIII, fig. 5).

♀, 37—41 mm.

Nearly related to *albistigma* Joicey and Talb. (*Ann. Mag. Nat. Hist.* [8] xx, 75, pl. 3, fig. 2) but smaller.

Fore wing with the brown ground-colour less tinged with rufous (more as in *costimacula* Joicey and Talb.), the black cloudings rather heavy; the white median fascia much broader, proximally reaching the cell, in its anterior half (and sometimes almost throughout) without dark irroration; a conspicuous lobe of the ground colour projects from its proximal side, generally almost reaching its distal side, bisected with white on M^2 ; antemedian line less oblique posteriorly; costal mark in white area small, the line which originates from it only indicated by a few dots; terminal white mark smaller, more crescentic, scarcely connected with the subterminal. Hind wing more blackish-grey.

Fore wing beneath with the orange band broad and (except for the

small grey midcostal mark) clear, widening slightly posteriorly, its anterior extremity (between R^3 and M^1) becoming whitish at termen.

Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, November-December, 1920, type and another; December, 1920 to January, 1921, two ♀ ♀.

It is just possible that this is a strikingly different form of the unique *costimacula* Joicey and Talb. (l. c., 76, pl. iv, fig. 17), with which it agrees in size, ground-colour and apparently shape of markings; but the hind wing as well as being blacker, has the termen rather more regular.

32. *Ctimene tenebricosa* sp. nov. (pl. XXIII, fig. 7).

♂ ♀, 35—38 mm.

Head and body brown-black, as in *velata* Warr. (*Nov. Zool.*, xiii, p. 139), slightly marked on side of prothorax and base of fore coxa with ochreous.

Fore wing uniform brown-black. Hind wing bright yellow-ochre with black borders all round, the costal and terminal of an average breadth of about 2 mm., the abdominal narrower.

Underside similar, both wings slightly marked with ochreous at base.

Mount Kunupi, Menoo Valley, 6,000 feet, November-December, 1920, type ♂, allotype ♀, three paratypes ♂; also eight ♂ ♂ from the Menoo River, 3,500-5,000 feet, November-December, 1920.

Variation slight, chiefly in the width of the borders of the hind wing. One example shows a slight orange dash on the cell-fold of the fore wing, about midway between base and termen. Another shows a small black dot on DC^2 of the hind wing.

33. *Sabaria perfulvata* sp. nov. (pl. XXIV, fig. 12).

♂, 28 mm.

Closely similar to *semirufa* Pagenst. (*Jahrb. Nass. Ver. Nat.*, xxxix, p. 153) of which it is probably the Mefor representative, possibly subspecies.

Fore wing and abdominal region of hind wing scarcely differentiated in colour from the rest of the hind wing, only a trifle less golden fulvous, more tinged (especially at costa of fore wing) with reddish; lines more orange, the postmedian on both wings rather more proximally placed than in *semifulva*; termen of hind wing with appreciable though minute excision between the radials.

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♀, 32 mm.

Larger than the ♂, of a rather deeper, more reddish colour, spots blackish, shading at abdominal margin of hind wing (especially towards tornus) more strongly differentiated.

Mefor Island, August 15 to September 10, 1920, holotype ♂, two paratypes ♂ and allotype ♀.

"*Prionia*" *haematopis* Warr., (*Nov. Zool.*, v, p. 255), founded on a single ♀ from Buru, belongs to the same assemblance, and *perfulvata* may well prove a race of it, but differs in the blackish patagia, tegulae, antenna and costal spots.

NEW GEOMETRIDAE AND DIOPTIDAE IN THE JOICEY COLLECTION.

By LOUIS B. PROUT, F.E.S.

(Plate XXV.)

THE miscellaneous species here figured—chiefly African Geometridae—have already been described in No. 2 of the present volume (pp. 252-269), together with *Callioratis abraxas* Feld. *grandis* Prout, which is so unmistakable that a figure is superfluous. One addition, however, has to be made, a ♂ of the interesting *Nothabraxas barlowi* (pl. xxv, fig. 14) having been received while No. 2 was in the press. The description is as follows:—

Nothabraxas barlowi Prout, ♂.

Nothabraxas barlowi Prout, BULL. HILL MUS., 1 (2), p. 264 (1922), ♀ (Nyasaland).

♂, 46 mm.

Paler than the ♀, the other distinctions in markings probably—in view of the known variability of the group—individual only. Fore wing with distal border of basal patch more vertical, midcostal patch smaller, not reaching so far beyond the discocellulars; cell-mark wanting; distal patch rather broader and extended to tornus. Hind wing almost without black maculation, excepting some rather asymmetrical midterminal spots.

Nyasaland: Chikala, near Zomba, February, 1922 (H. Barlow) neallotype ♂.

NEW PALAEARCTIC GEOMETRIDAE.

BY LOUIS B. PROUT, F.E.S.

Subfamily OENOCHROMINAE.

1. *Egea lysimeles* sp. nov.

♂, 30 mm.

Closely related to *pellucida* Stgr. though larger and somewhat longer winged. Antenna somewhat longer. The branches well developed to at least the 28th joint (both tips unfortunately damaged), whereas the antenna of *pellucida* is only 26-jointed; the branches, moreover, rather more slender and lax, more noticeably clavate-tipped.

Fore wing greyer (less yellow) than in *pellucida*, the scaling equally sparse and mixed with hair, the scales on an average narrower; the markings, indistinct in *pellucida*, are here obsolete, only the costal and distal margins look a little more coloured than the rest, the scaling being here less sparse. Hind wing concolorous.

Underside the same.

Central Altai. Type in coll. Joicey, received from Staudinger and Bang-Haas.

The venation is evidently inconstant, for the fore wing is highly asymmetrical, SC⁵ on the left wing branching almost opposite SC², whereas on the right wing (as in all the known *pellucida*) it is far distal thereto. On the hind wing SC² is connate with R¹; in two out of the three *pellucida* it is separate, in one connate. The three originals of *pellucida* (Tchuja Valley, South-East Altai) passed into Mr. Joicey's possession with the Elwes collection. These two species have more hairy face, palpus, pectus and scaling than typical *Egea*.

Subfamily HEMITHEINAE.

2. *Microloxia therapaena* sp. nov.

♂, 24 mm.

Face green. Palpus short—apparently rather shorter than in *menadiara* Th.-Mieg, in which it surpasses the face by the length of

the (shortish-moderate) third joint; green. Vertex white; occiput narrowly green. Antennal shaft white; pectinations short. Collar, thorax and base of abdomen above green, otherwise mixed with white; the abdomen on the first segments with slight ridges. Fore leg reddish on upper and inner side.

Fore wing slightly narrower than in *menadiara*, otherwise similar; of the same yellowish olive-green; SC¹ free, SC² arising much before SC⁵; costal edge whitish-buff; lines indicated by small white dots on the veins, the antemedian almost obsolete except on SM², the postmedian about 2.5 mm. from termen, with very slight proximal curve behind middle; cell-dot barely indicated in darker-green; fringe green with whitish tips. Hind wing with termen slightly more bent in middle than in *menadiara*; antemedian line obsolete; postmedian more incurved in posterior part than on fore wing, dark-green cell-spot less obsolete; fringe as on fore wing.

Underside whitish-green, greenest in costal half of fore wing and narrowly at distal margins; costal edge and fringes nearly as above.

Tunis: Gafsa, received from Staudinger and Bang-Haas.

Distinguished from *menadiara* by the characters noted above and by the shorter antennal pectination (2 against 3).

Subfamily STERRHINAE.

3. *Rhodostrophia erythema* sp. nov.

♀, 32 mm.

Head whitish-buff, irrorated, especially on sides of face and on vertex, with vinaceous. Palpus browner. Body pale buff, thorax vinaceous above.

Fore wing less produced apically than in *praecisaria* Stgr. (shaped more as in *badiaria* Frr.), termen very straight; fawn colour with a very decided tinge of vinaceous; cell-spot black, elongate and fairly thick; lines—as also a very fine irroration which is scarcely visible without the lens—smoky with a slight olivaceous tinge, all (especially the median) strengthened at costa; antemedian at two-thirds the distance between base and DC, with outward angles at both folds, that at the submedian strong; median rather near the cell-spot, being a little inclined to curve inwards at costal end, posteriorly nearly as in *praecisaria*, postmedian also less oblique than termen, retracted a little from SC⁵ to the costal thickening, otherwise much as in *praecisaria*; terminal present but fine and not very strong. Hind wing rounded; costal area

pale and feebly marked; the rest concolorous with fore wing and with the lines present, excepting the antemedian; cell-dot very small and weak, though longer than broad.

Both wings beneath rather paler and more glossy, the posterior part of the fore wing (except terminally) lighter; cell-spots moderate, nearly equal in development; postmedian present on both wings, but only its costal spot strong; costal spot on median weakly indicated.

E. Bokhara: Garm (= Harm), Peter the Great Range, June. Type in coll. Joicey, received from Staudinger and Bang-Haas.

Possibly a colour-form of *praecisaria*, as some ♀♀ of that species (especially from Kuliah, Afghanistan) rather incline towards it in shape and in the anterior curve of the lines; the acute median angulation of the antemedian is, however, noteworthy.

Subfamily LARENTIINAE.

4. *Xanthorhoë quadrifasiata tannuensis* subsp. nov.

♂, 26—28 mm.

A small mountain form, with distal area of fore wing and whole of hind wing and underside relatively weakly marked, otherwise varying in the same way as in the name-type.

North-West Mongolia: Schawyr, East Tannu-ola, 2,500 metres, June. Type in coll. Joicey; paratypes in coll. Joicey and coll. L. B. Prout. Received through Staudinger and Bang-Haas.

5. *Ortholitha dicaea* sp. nov.

♂, 32 mm. (type), 38 mm. (paratype).

Structure and coloration closely as in *propinguata* Koll., resembling especially the smaller Japanese race of that species (*niphonica* Butl.), wings perhaps slightly broader still.

Fore wing with subbasal and antemedian lines much as in *propinguata*, very fine and not sharply expressed; median band slightly greyer than in *propinguata*, becoming black towards the postmedian line, which in the type is almost perfectly straight, only with the faintest appreciable curve anteriorly; in the paratype slightly more sinuous, but still much more direct than in *propinguata*; outer area light-brown in proximal part, whitish in distal, the subterminal line almost entirely obsolete; triangular black apical spot in cellule 7 rather small (as in some *propinguata*), the slightly oblique dash

behind SC⁵ well developed. Hind wing with the postmedian slightly curved, much less bent and sinuate than in *propinguata*.

Underside similarly differentiable by the course of the postmedian.

West China, Omei, August 4, 1921, type; August 1, 1921, paratype (G. M. Franck).

An interesting link between *propinguata* and *corioidea* Bastelb.

6. *Calostigia stilpna* sp. nov.

♂, 29 mm. Face smooth, very slightly prominent (as in *aqueata* Hb., *austriacaria* H.-Sch., etc.); white. Palpus 1½; light brown on outer side. Vertex whitish, tinged with brown. Antennal pectinations rather short, slightly fusiform, inclined to be appressed to the shaft. Thorax and abdomen slender; brownish-white. Fore leg in part dark-irrorated, leaving the ends of the joints whitish.

Wings strongly glossy. Fore wing rather narrow, triangular, the costal margin and termen little curved; whitish, rippled with numerous olive-grey wavy lines of varying distinctness, a thin subbasal (at about 2 mm.), a thick one proximal to the slightly darkened outer area and especially two rather sharply defined ones bounding the median area the most strongly developed; median area rather narrow (3 mm. at costa, 2 mm. at hindmargin), its darkening almost inappreciable except against the postmedian line, which is rather more deeply lunulate-dentate than the others but is only a very little bent outward between R¹ and M²; cell-mark strong, slightly elongate; the bisected bands proximally and distally to the median area as usual rather clear white, especially the distal; terminal line fine and weak, interrupted at and midway between the veins; fringe very weakly chequered.

Hind wing rather strongly elongate (much as in *austriacaria*); whitish, very weakly shaded with grey from base to postmedian line (which is very weakly expressed), a little more strongly in distal area; cell-dot minute, subobsolete; the white (very feebly bisected) outer band noticeably broader than on fore wing; terminal line as on fore wing; fringe not chequered.

Both wings beneath glossy white, quite weakly but about uniformly marked, much as in normal *aqueata*.

Digne, received from Staudinger and Bang-Haas.

Probably near *varonaria* Vorbr. and Müll.-Rutz ("Schmett. Schweiz.," ii, 63), which is only known to me from the description, but is said to

be grey-green with the median area in the ♂ weakly expressed and broad, etc.

7. *Coenotephria homophana petri* subsp. nov.

♂, 31 mm.; ♀, 30 mm.

Both wings paler (whiter) than in the Indian form *homophana homophana* Hmps. Fore wing with the dark fuscous median band rather more solid, with rather acute distal projections on R³; the black cell-spot strong, somewhat elongate; markings in posterior part of distal area weak.

Bokhara: Garm (Harm), Peter the Great Range, June, type ♂ in coll. Joicey. Ferghana: Ispajran, North Alai, 3,400 metres; August, ♀ allotype in coll. Joicey, ♀ paratype in coll. L. B. Prout. All received through Staudinger and Bang-Haas.

On account of its rather slenderer build and slightly different facies, it is possible this will prove a separate species.

Subfamily GEOMETRINAE.

8. *Nothomiza lycauges* sp. nov.

♀, 41 mm.

Face and palpus brown. Vertex and antenna paler, more fleshy. Body brown, the patagia mixed with flesh-colour.

Fore wing slightly broader than in *dentisignata* Moore (Hmps., Faun. "Ind. Moths.," iii, fig. 88), apex minutely produced; SC' near SC²⁻⁵; light-brown, with a tinge of reddish-ochreous and rather coarsely sprinkled with small olive-grey strigulae; costal area as far as SC paler, with a delicate flush of pink; cell-spot black; an oblique white line to hindmargin slightly beyond middle, strongly tinged distally with pink, the colour thence gradually shading distally into the browner ground; proximally to this line is an ill-defined shade slightly darker than the ground-colour and free from the strigulation; terminal line very fine, not extremely dark; fringe pinkish. Hind wing with both angles stronger than in *dentisignata*; no cell-spot, the line and shadings of fore wing continued, the line reaching abdominal margin proximally to middle.

Underside pale, almost unmarked; both wings with small blackish cell-dot; fore wing with slight indications (especially anteriorly) of the dark vein-dots just beyond the oblique line of upperside; terminal line olivaceous; fringe tinged with pink.

West China: Kwanhsien, Szechuan, August 21, 1920 (G. M. Franck).

Pending revision, I have called this genus (*Caberodes* Hmps. nec. Guen.) by the name of *Nothomiza*, which Hampson sinks; but the new species will probably belong to his Section 1. In citing the Indian *achromaria* Guen. as the type of Guenée's genus, Hampson cannot have read the author's own remarks, for after discussing the American section he definitely says that *achromaria* might form a separate genus.

9. *Synegia angusta* sp. nov.

♂, 30 mm.

Head and body pale ochreous-brown, the pointed cone at lower extremity of face darker, the palpus darker-mixed on outer side, its terminal joint less elongate than in most *Synegia*. Antenna with very short ciliation (less than half).

Fore wing narrower than in the rest of the genus; cell rather longer (slightly over, instead of slightly under, half), SC^1 free, SC^2 stalked to beyond SC^5 ; whitish-ochreous, with rather coarse darker irroration and with the veins also deeper ochreous; costal area (about to SC) somewhat infuscated, the extreme edge again lighter, fuscous-spotted; cell-dot black; a thick, not sharply defined antemedian line, apparently angled outward near costa but only becoming distinct about SC , where it is twice as near to cell-dot as to base, then very gently curved and nearly as oblique as termen; a blackish line near termen, rather strongly curved anteriorly, then parallel with termen; an apical dash joining this line at R^{1-2} ; thick dashes along R^1 and R^8 from line to termen; terminal line fine but equally dark; fringe spotted at vein-ends. Hind wing rather narrower than in other *Synegia*, but not bent as in *Callerrinnys*; cell-dot black; proximal shade of fore wing continued near base; outer line of fore wing continued, cutting almost straight across wing to abdominal margin just beyond two-thirds; traces of a very fine supplementary line (true postmedian) meeting it at both ends and curving parallel with termen; a dark terminal line; fringe spotted.

Underside similarly marked, rather duller, proximally rather more blurred.

West China: Omei, July 26, 1921, type ♂; Kwanhsien, August 15, 1920, paratype ♂ (G. M. Franck).

LIST OF SPECIES OF PYRALIDAE.

COLLECTED BY T. ALEXANDER BARNES, IN CENTRAL AFRICA,
1919, 1920, 1921.

By A. J. T. JANSE,

*Government Research Scholar, Union of South Africa, Research Professor of
Systematic Entomology at the Transvaal University College, Pretoria.*

CRAMBINAE.

1. *Crambus carpherus* Hmps. n.

Lake Edward, Belgian Congo, November, 1919. One specimen.¹

2. *Ancylolomia chrysolinealis* Fawc., *Proc. Zool. Soc. Lond.*, 1917,
p. 247, pl. i, fig. 2.

Tanganyika Territory, February-March (1921). One specimen.

HYPSTROPINAE.

3. *Hypsotropa chionorhabda* Hmps. n., *Proc. Zool. Soc. Lond.*, p. 70
(1918).

Tanganyika Territory, February-March, 1921. Two specimens.

CHRYSAUGINAE.

4. *Magna hampsoni* Dist., *Ann. Mag. Nat. Hist.* (6), xx, p. 17 (1897).
Lucita Valley, November-December, 1918. One specimen.

SCHOENOBINAE.

5. *Patissa geminalis* Hmps. n., *Ann. Mag. Nat. Hist.* (9), iv, p. 316
(1919).

Tanganyika Territory, February-March, 1921. One specimen.

PYRALINAE.

6. *Tyndis dentilinealis* Hmps. n., *Ann. Mag. Nat. Hist.* (7) 17, p. 357
(1906).

Tanganyika Territory, February-March, 1921. One specimen.

¹ The material submitted to me for study was kindly presented by Mr. J. J. Joicey to the collection of the author.

7. *Bostra* spec.

Two specimens, but in too poor condition to describe, seeing that most species of this group are very inconspicuously marked. They are from the Great Craters, Tanganyika Territory, in March, 1921.

HYDROCAMPINAE.

8. *Argyractis nyalalis* Hmps. n., *Ann. Mag. Nat. Hist.* (8) xix, p. 367 (1917).

Tanganyika Territory, February-March, 1921. One specimen.

Another *Hydrocampinid*, probably belonging to a new genus near *Camptomastix* and *Lasiogyia*, from which it mainly differs in the structure of the fore wing. As the single specimen is, however, in not too good condition, I think it better to postpone the description till better material is forthcoming. Mount Ruwenzori, Belgian Congo, 2,300 metres, December, 1919.

9. *Parthenodes angularis* Hmps. n., *Trans. Ent. Soc. Lond.*, p. 184 (1897).

Tanganyika Territory, February-March, 1921. One specimen.

PYRAUSTINAE.

10. *Hymenia fascialis* Cram., "Pap. Exot.," iv, pl. cccxcviii, fig. O. (1794).

Tanganyika Territory, February-March, 1921. Four specimens.

11. *Euryparodes bracteolalis* Zell., "Lep. Micr. Caffr.," p. 39 (1852).

Tanganyika Territory, February-March, 1921. One specimen.

12. *Pagyda traducalis* Zell., "Lep. Micr. Caffr.," p. 54 (1852).

Belgian Congo, Ituri Forest. One very dark specimen.

13. *Pagyda caritalis* Walk., Cat., xviii, p. 789 (1859).

Belgian Congo, northern bank of Ituri River, half way between Avakubi and Penghe, May, 1920. One specimen.

14. *Bocchoris inspersalis* Zell., "Lep. Micr. Caffr.," p. 33 (1852).

Tanganyika Territory, February-March, 1921. Four specimens.

15. *Filodes costivitalis* Guen., "Réunion," p. 65 (1863).

Kissenji, Lake Kivu, Tanganyika, September-October, 1919; Congo Free State, Lufira River, affinity of Kikura and Bulus Rivers, near Likasi, 4,000 feet, February, 1919. Six specimens.

16. *Phostria dariusalis* Walk., Cat., xviii, p. 541 (1859).

Congo River below Lisala, May, 1920 ; caught at light. One specimen.

17. *Phostria albescentalis* Hmps., *Ann. Mag. Nat. Hist.* (9), p. 130 (1918).

Mikeno Volcano, Kivu, Tanganyika, October, 1919. One specimen.

18. *Lamprosema indicata* Fabr., "Syst. Ent.," p. 640 (1775).

Tanganyika Territory. One specimen.

19. *Botyodes asialis* Guen., "Delt. and Pyr.," p. 321 (1854).

Congo River below Coquilhatville, May, 1920 ; caught at light. One specimen.

20. *Lygropia pogonodes* Hmps., *Ann. Mag. Nat. Hist.* (8) x, p. 19 (1912).

Upper Akanjaru Valley, Urindi District, East Tanganyika, August, 1919. One specimen.

21. *Margaronia baldersalis* Wlk., Cat., xviii, p. 527 (1859).

Belgian Congo: Ituri Forest, Semliki watershed, North-West Beni, January, 1920 (caught at light) ; Cameroons, Bitje, Ja River, October (wet season). In the last locality collected by Bates ; in all five specimens.

22. *Margaronia chlorochroalis*, Hmps., *Ann. Mag. Nat. Hist.* (8) , x, p. 572 (1912).

Belgian Congo : Ituri Forest, Semliki watershed, North-West Beni, January, 1922. Two specimens.

23. *Margaronia paramicalis* Kenr., *Trans. Ent. Soc. Lond.*, p. 100, pl. vi (1917).

Belgian Congo : Kinchasa, Congo River, May, 1920 ; north bank of Ituri River, half-way between Avakubi and Penghe, May, 1920 ; Forest between Epulu (east side) and Ituri Rivers, 1920. All caught at light. Four specimens.

24. *Margaronia picticaudalis* Hmps., *Ann. Mag. Nat. Hist.* (8), i, p. 479 (1908).

Belgian Congo : Cartouche near Lesse, west of Semliki River, May, 1920 ; Bukama, Lualaba River, June, 1919. Four specimens.

25. *Margaronia prasinophila* Hmps., *Ann. Mag. Nat. Hist.* (8), x, p. 571 (1912).

Belgian Congo : Ituri Forest, Congo-Semliki watershed, North-West Beni, January, 1920. One specimen.

26. *Margaronia quadrifascialis* Hmps. n., *Proc. Zool. Soc. Lond.*, 1898, p. 744.

Belgian Congo: Bente, Semliki River, January, 1920. One specimen.

27. *Margaronia sinuata* Fabr., "Spec. Ins." ii, p. 267 (1781).

Belgian Congo: Cartouche near Lesse, W. Semliki River, January, 1920 (coll. Barns); Cameroons; Bitje, Ja River, October, 1919, wet season (coll. Bates). Seventeen specimens.

28. *Margaronia stolalis* Guen., "Delt. and Pyr.," p. 293, pl. iii, fig. 11 (1854).

Belgian Congo: North bank of Ituri River, half-way between Avakubi and Penghe May, 1920. Two specimens.

29. *Margaronia unionalis* Hübn., "Eur. Schmett. Pyr.," f. 132 (1796).

Central Africa, coll. Barns. One specimen.

30. *Margaronia sericea* Drury, "Ins.," ii, p. 9, pl. vi, fig. 1 (1770).

Belgian Congo: East of Epulu River, North Ituri Valley between Penghe and Irumu, March, 1920. One specimen.

31. *Margaronia stolalis* Guen., "Delt. and Pyr.," p. 293, pl. iii, fig. 11 (1854).

Belgian Congo: North bank of Ituri River half-way between Avakubi and Penghe, May, 1920. Two specimens.

32. *Phlyctaenia tyres* Cram., "Pap. Exot.," iii, p. 124, pl. cclxiii, fig. C (1779).

Belgian Congo: North bank of Ituri River, half-way between Avakubi and Penghe, May, 1920.

33. *Nausinoe argyrosticta* Hmps. n., *Proc. Zool. Soc. Lond.*, p. 501, pl. xli, fig. 3 (1910).

Upper Ruvubu River, Urindi District, Tanganyika, August, 1919. One specimen.

34. *Crocidolomia binotalis* Zell., "Lep. Caff.," p. 65 (1852).

Upper Ruvubu Valley, Urindi District, Tanganyika, August, 1919.

35. *Maruca testulalis* Geyer, "Hübn. Samml. Exot. Schmett.," iv, 4, p. 12, ff. 629, 630 (1832).

Tanganyika Territory. One specimen.

36. *Paschiodes dinteri* Grünb., *Med. Ges. Jena*, xvi, p. 143, pl. iii, fig. 20 (1910).

Belgian Congo: Semliki River, December 1919. Two specimens.

37. *Psara basalis* Walk., *Cat.*, xxxiv, p. 1404 (1865).

Tanganyika Territory. One specimen.

38. *Uresphita (Mecyna) gilvata* Fabr., "*Ent. Syst.*," iii, 2, p. 208 (1794).

Urindi District, July-August, 1919. One specimen.

39. *Pyrausta rufilinealis* Hmps., *Proc. Zool. Soc. Lond.*, p. 505, pl. xli, fig. 23 (1910).

Belgian Congo: North bank of Ituri River, half-way between Avakubi and Penghe, May, 1920. One specimen.

40. *Pyrausta rufitincta* Hmps., *Ann. Mag. Nat. Hist.* (8), xii, p. 27 (1913).

Tanganyika Territory, February-March, 1921. One specimen.

41. *Pyrausta impunctata* Warr., *Nov. Zool.*, iv, p. 129 (1897).

Tanganyika Territory, February-March, 1921. Two specimens.

Very few remarkable finds were among this material and many of them were in rather broken condition. I think if more collecting was done with suitable light at night not only would the material have been more numerous, but also of a more interesting nature. Presumably nearly all these specimens were collected in the daytime, as the moths were disturbed in the bush. This would also account for the preponderance of the *Pyraustinae* and especially of *Margaronia*. Yet this country ought to yield many interesting forms, which would throw light on the connection between the South African and Mediterranean regions. Systematic collecting with that point in view seems highly desirable.

LIST OF SPECIES, INCLUDING DESCRIPTIONS OF NEW SPECIES, BELONGING TO THE FAMILY PYRALIDAE.

COLLECTED BY MESSRS. C., F. AND J. PRATT, IN THE MOUNTAINS OF
CENTRAL CERAM DURING OCTOBER, 1919, TO FEBRUARY, 1920.

BY A. J. T. JANSE.

Government Research Scholar, Union of South Africa.

Subfamily PYRAUSTINAE.

1. *Pycnarmon cribrata* Fabr., "Ent. Syst.," iii, 2, p. 215 (1794).
Manusela, 6,000 feet. One specimen.
2. *Heterocnephys scapularis* Led., *Wien. ent. Mon.*, p. 402, pl. xiv,
f. 5 (1863).
Manusela, 6,000 feet. One specimen.
3. *Agrotera pictalis* Warr., *Ann. Mag. Nat. Hist.* (6), xvii, p. 139 (1896).
Manusela, 6,000 feet. One specimen.
4. *Agrotera effertalis* Walk., *Cat.*, xvii, p. 348 (1859).
Manusela, 6,000 feet. Nineteen specimens.
5. *Bocchoris insulalis* Hampson., *Ann. Mag. Nat. Hist.* (9), p. 257 (1912).
Manusela, 6,000 feet. One specimen.
6. *Bocchoris telephusalis* Walk., *Cat.*, xix, p. 974 (1859).
Manusela, 6,000 feet. One specimen.
7. *Ulopeza cruciferalis* Kenr., *Proc. Zool. Soc. London*, p. 79, pl. iv,
f. 97 (1907).
Manusela, 6,000 feet. Two specimens.
8. *Caprinia diaphanalis* Walk., *Cat.*, xxxiv, p. 1365 (1865).
Manusela, 6,000 feet. One specimen.

The material used in preparation of this paper has been kindly presented by Mr. J. J. Joicey to the collection of the author.

Names of colours used in descriptions are according to Ridgway's "Color Standards and Color Nomenclature," 1912; number behind each colour indicates number of plate in that work.

9. *Caprinia marginata* nov. sp.

♀. Very much like *C. felderi* Led., but differing mainly from it in the marginal border of the hind wing being continued to anal angle.

Fore wing, hind wing, thorax above and below and legs white (abdomen missing); prothorax above, head and palpi except a narrow white streak at lower part of first joint, black; fore and hind wing bordered with fuscous (xlvii); femora and tibia of fore legs tinged above with fuscous. Fore wing with costa and outer margin broadly bordered with fuscous as in *felderi*, but costal border even more irregular on inner side; some bluish metallic scaling at these irregularities, as is also the case in *felderi*; an oblique series of three small white spots at beyond two thirds on veins 5 to 8, of which the upper two are the larger; border along outer margin from vein 2 to inner margin a little broader and more oblique than in *felderi*. Hind wing with a fuscous spot on discocellulars, rounder and rather larger than in *felderi*; outer-marginal border at apical part as in *felderi*, but continued and gradually getting broader beyond vein 4 to anal angle and dentate inwardly on vein 2 and 1b. Underside as above, but slightly paler. Antennae at basal eighth black, beyond white and annulated; inner median spurs of hind legs longer than in *felderi*; shape of wings as in that species.

Exp. 30 mm.

Habitat.—Central Ceram, 3,000 feet, October-November, 1919, C., F. and J. Pratt. Type in coll. Janse.

10. *Filodes sexpunctalis* Snell, *Trans. Ent. Soc. Lond.*, p. 603, pl. xx, figs. 6, 6a (1890).

Central Ceram, 3,000 feet, December, 1919. One rather small specimen.

11. *Filodes fulvidorsalis* Hübn., "Samml. Exot. Schmett.," iv, 4, p. 15, figs. 643, 644 (1832).

Central Ceram, 300 feet, December, 1919. Three specimens.

12. *Nevrina procopia* Cram., "Pap. Exot.," iv, pl. ccclxviii, fig. E (1782).

Manusela, 6,000 feet, December, 1919. One specimen.

13. *Phostria basalticalis* Led., *Wien. ent. Mon.*, p. 407, pl. xiv, fig. 11 (1863).

Manusela, 6,000 feet, December; Central Ceram, 3,000 feet, January-February, 1920. Four specimens.

14. *Phostria leucogaster* Hmps., *Ann. Mag. Nat. Hist.* (8), ix, p. 329 (1912).

Manusela, 6,000 feet, December, 1919. Three specimens.

15. *Phostria margarita* Butl., *Ann. Mag. Nat. Hist.*, 1887, ii, p. 120 (1887).

Manusela, 6,000 feet, December, 1919. One specimen.

16. *Dichocrocis punctiferalis* Guen., "Delt. and Pyr.," p. 320 (1854).
Central Ceram, 3,000 feet, January-February, 1920. One specimen.

17. *Dichocrocis nigrilinealis* Walk., Cat., xxxiv, p. 1410 (1865).
Central Ceram, 3,000 feet, January-February, 1920.

18. *Dichocrocis evaxalis* Walk., Cat., xix, p. 995 (1859).
Ceram, 6,000 feet, October-December, 1919. Four specimens.

19. *Sylepta adductalis* Walk., Cat., xviii, p. 669 (1859).
Manusela, 6,000 feet, October-December, 1919. Six specimens.

20. *Sylepta fabiusalis* Walk., Cat., xviii, p. 175 (1859).
Manusela, 6,000 feet, October-December (1919). One specimen.

21. *Sylepta sellalis* Guen., "Delt. and Pyr.," p. 330 (1854).
Manusela, 6,000 feet, October-December, 1919. One specimen.

22. *Sylepta sabinusalis* Walk., Cat., xviii, p. 708 (1859).
Manusela, 6,000 feet, October-December, 1919. Four specimens.

23. *Margaronia hilaralis* Walk., Cat., xviii, p. 532 (1859).
Manusela, 6,000 feet, October-December, 1919. Twelve specimens.

24. *Margaronia eurytusalis* Walk., Cat., xvii, p. 503 (1859).
Manusela, 6,000 feet, October-December, 1919. One specimen.

25. *Margaronia indica* Saund., *Trans. Ent. Soc. Lond.*, p. 163, pl. xii, ff. 5, 6, 7 (1851).

Manusela, 6,000 feet, October-December, 1919. One specimen.

This species is abundant wherever it occurs, so I think that this scarce representation was intentional on the part of the collector.

26. *Margaronia margaritaria* Clerck, *Icones*, ii, pl. li (1764).
Central Ceram, Teloeti Bay, February, 1920. One specimen.

27. *Margaronia decipiens* Hmps., *Ann. Mag. Nat. Hist.* (8), x, p. 567 (1912).

Manusela, 6,000 feet, October-December, 1919. One specimen.

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28. *Margaronia nigropunctalis* Brem., "Lep. Ost.-Sib.," p. 67, pl. vi, fig. 5 (1864).

Central Ceram, 4,600 feet, January, 1920. Twelve specimens.

29. *Margaronia annulata* Fabr., "Ent. Syst.," iii, 2, p. 214 (1794).

Manusela, 6,000 feet, October-December, 1919. Four specimens.

30. *Margaronia warrenalis* Swinh., *Ann. Mag. Nat. Hist.* (6), xiv, p. 148 (1894).

Manusela, 6,000 feet, October-December, 1919. Eleven specimens.

31. *Margaronia amphitritalis* Guen., "Delt. and Pyr.," p. 307 (1854).

Manusela, 6,000 feet, October-December, 1919. Two specimens.

32. *Margaronia marginata* Hmps. n., "Ill. Het.," ix, p. 169, pl. clxxiii, fig. 23 (1893).

Central Ceram, 6,000 feet, October-December, 1919. Twelve specimens.

33. *Margaronia conjunctalis* Walk., Cat., xxxiv, p. 1357 (1865).

Central Ceram, 3,000 feet, January-February, 1920. One specimen.

34. *Margaronia actorionalis* Walk., Cat., xvii, p. 498 (1859).

Central Ceram, 3,000 feet, January-February, 1920. One specimen.

35. *Margaronia deliciosa* Butl., *Ann. Mag. Nat. Hist.* (5), xx, p. 118 (1887).

Manusela, 6,000 feet, October-December, 1919. One specimen.

36. *Margaronia exquisitalis* Kenr., *Proc. Zool. Soc. Lond.*, p. 84, pl. iv, fig. 175 (1907).

Manusela, 6,000 feet, October-December, 1919. Sixty-four specimens, all females.

37. *Margaronia agathalis* Walk., Cat., xvii, p. 384 (1859).

Manusela, 6,000 feet, October-December, 1919. One specimen.

38. *Margaronia doleschalis* Led., *Wien. ent. Mon.*, p. 402, pl. xiv, fig. 1 (1863).

Central Ceram, 3,000 feet, October-November, 1919. One specimen.

39. *Margaronia pfeifferae* Led., *Wien. ent. Mon.*, p. 399, pl. xiii, fig. 13 (1863).

Manusela, 6,000 feet, October-December, 1919. One specimen.

40. *Margaronia polystrigalis* Hmps. n., *Ann. Mag. Nat. Hist.* (9), i, p. 279 (1918).

Manusela, 6,000 feet, October-December, 1919. Three specimens.

41. *Margaronia caesalis* Walk., Cat., xvii, p. 499 (1859).

Manusela, 6,000 feet, October-December, 1919. Four specimens.

42. *Margaronia stolalis* Guen., "Delt. and Pyr.," p. 293, pl. iii, fig. 11 (1854).

Central Ceram, 6,000 feet, October-December, 1919. Twenty-three specimens.

43. *Margaronia bivitalis* Guen., "Delt. and Pyr.," p. 293 (1854).

Manusela, 6,000 feet, October-December, 1919. Two specimens.

44. *Margaronia tricoloralis* Pag., J. B. Nass, p. 190 (1888).

Central Ceram, 4,000 feet, January, 1920. Six specimens.

45. *Margaronia brunneomarginalis* Kenr., *Proc. Zool. Soc. Lond.*, p. 84, plate iv, fig. 166 (1907).

Manusela, 6,000 feet, October-December, 1919. One ♂.

I have little doubt that this identification is correct, although the description is not convincing and the broad yellowish costa as given in the figure is less broad in my specimen. I take it that Sir George's figure is that of a female. I have other specimens from New Guinea, identified by me at the B. M., and which agree entirely with the Ceram specimen. The underside of the abdomen of all my specimens is, however, pale turquoise-green (vii), and not silvery as stated in the description.

46. *Margaronia vertumnalis* Guen., "Delt. and Pyr.," p. 309 (1854).

Manusela, 6,000 feet, October-December, 1919. One male specimen.

47. *Margaronia* (*Sisyrophora*) *joiceyi* sp. nov.

This species is very close to *M. pfeifferae* Led, but is easily distinguished from it by the much broader suffusion along the outer margins of both wings on upper and under side.

♂. Both wings, thorax and abdomen on under and upper side and legs white; wings thinly scaled, but more densely than in *pfeifferae*; tegulae and patagia and scales between antennae clay colour (xxix), suffused with fuscous (xlvi); palpi white, with inner half from base to tip fuscous; antennae white, basal portion and terminal part suffused with fuscous, basal joint and tooth clay colour, a tuft of glossy fuscous scales on inner side before the tooth; abdomen above with avellaneous (xl) rings anteriorly on most segments and reaching half-way of segment, last segment almost entirely avellaneous and irrorated with

fuscous; anal tuft black; femora and tibiae of all legs tinged on outer side with glossy fuscous hairs mixed with black ones, especially on the hind legs. Fore wing on upperside with costa broadly bordered with glossy-fuscous reaching at basal half as far as lower median, except an oblong narrow patch just before discocellulars and the discocellulars themselves; beyond discocellulars a broader fuscous mark, outer margin bordered with fuscous to beyond half-way to discocellulars, except at tornus, where it suddenly becomes narrower, this border is diffused on the inner side, but getting more and more glossy towards the cilia, where it gets a silvery scaling as in *pfeifferae*; cilia fuscous. Hind wing with diffused elongate discocellular mark; outer marginal border as on fore wing, extending for nearly one-third width of wing; cilia fuscous. Underside as above, but less glossy.

♀ like ♂, but costal border of fore wing with two broad streaks of clay colour; white patch in cell larger and an additional rounded white spot just above it, which was only indicated in the ♂; outer marginal borders of both wings less diffused on inner side, less glossy and narrower, about two-thirds of that of ♂; discocellular mark of hind wing as narrow as in *pfeifferae*, but in some ♀♀ almost as broad as in ♂. Underside lighter than in ♂.

Exp. ♂ type, 32 mm.; ♀ type, 40 mm., in coll. Janse.

Habitat. — Central Ceram, Manusela, 6,000 feet, October-December, 1919.

Eleven ♂♂ and twelve ♀♀, including types. One specimen from Kenali (Sumatra), H. Forbes.

There is a possibility that this species is identical with Sir George Kenrick's *G. pfeifferae* var., *Proc. Zool. Soc. Lond.*, pl. lxxviii, fig. 21 (1912), which I take to be a ♀, but the colour of the cilia is entirely different, and the ♂♂ of *M. joiceyi* have the outer marginal suffusion broader.

48. *Margaronia curvilinea* sp. nov.

This species resembles *M. nigropunctalis* Brem. very much, but the postmedial lines of both wings are not on the same place and are irregularly curved, especially in the hind wings. Besides the hind wings are more curved at the outer margin, and the species is also rather larger.

♂. Head, palpi, thorax and abdomen on upper and under side, legs and wings pure white, wings with a mother-of-pearl gloss; tegulae and patagia and palpi on upper part mars-yellow (iii); a

broad diffused fuscous line from base to tip of palpi; frons yellow-ochre (xv); antennae white, biciliated; anal tuft white; femora and tibiae of fore legs densely suffused with fuscous; mid-tibiae slightly streaked with mars-yellow above. Fore wing above with a broad border of tawny-olive (xxix) along costa, as broad as to upper median and reaching to apex; fuscous-black spots on upper median at one-third and two-thirds and a spot at upper and lower angle of tawny-olive; an ill-defined postmedial line of smoke-grey (xlvi) at beyond middle of distance from end of cell to outer margin, very faint near costa and evenly curved outwardly between veins 5 and 3, inwardly curved at vein 2 and slightly angled at 1b; a series of fine black spots at termen; cilia white. Hind wing with a black spot at lower angle of cell; a postmedial line as in fore wing from near costa obliquely to anal angle and roundly excurved between veins 2 to 6; fine black spots on veins at termen; cilia white. Underside as upper, but costal border of fore wing narrower and fuscous; postmedial line of both wings obsolete. ♀ like ♂ but costal border of fore wing clay colour (xxix).

Exp. ♂ and ♀ 37 mm.

Habitat.—Central Ceram, Manusela, 6,000 feet, October-December, 1919.

One ♂, six ♀ ♀. Types in coll. Janse.

49. *Margaronia pratti* sp. nov.

This species comes very close to *M. nigripunctata* Brem., *M. annulata* Fabr., and *M. warrenalis* Swinh. It has the postmedial lines of *nigripunctata*, but they are more diffused, and as the white background is less transparent, they are more conspicuous; the maculae of the fore and hind wings are as in *annulata*, but the species is bigger and the postmedial lines are less irregular, even more regular than in *warrenalis*, in which the maculae are also smaller and less conspicuous.

♂. Thorax, abdomen, wings on upper and under side, antennae and legs pure white, wings with a mother-of-pearl gloss; palpi with lower half white, upper half and frons ochraceous-orange (xv); vertex between the antennae with martius yellow (iv) hairs; tegulae and patagia ochraceous-orange at base; femora of fore legs buckthorn-brown (xv), tibia with the same colour on upper and lower thirds and the tarsi suffused with that colour towards end; two other legs pure white; third segment of abdomen with two small lateral ochraceous-orange patches of scales and dorsal scales of last segment tipped with

ochraceous-orange; anal tuft of black hairs mixed with white, or as in one specimen, black, tipped with ochraceous-orange. Fore wing with the costa broadly (as far as upper median) bordered with antimony-yellow (xv); basal third of cell and half the distance below lower median covered with baryta-yellow (iv) scales, edged outwardly by some fuscous scaling: a rounded similar mark half-way of cell, also edged, except along upper median, by fuscous shading; another wedge-shaped similar mark at end of cell, here and there edged by fuscous scales, straight on inner side and incurved outwardly, following discocellulars, forming a well-defined spot at lower angle; a round similar mark at middle of inner margin between veins 1b and 2, also finely edged by fuscous scaling; postmedial line formed by a series of intra-nervular ill-defined maculae, consisting of vinaceous-buff scaling, running parallel to inner margin and situated rather close to it (in some specimens the line is slightly incurved at vein 2); a terminal faint ochraceous-orange line, with fuscous scaling on the veins, narrow and long before middle and broader but shorter towards the apex; cilia marguerite-yellow (xxx) with slightly darker line across middle.

Hind wing with a faint discocellular mark of fuscous scaling before and beyond discocellulars; postmedial series of maculae as in fore wing but even closer to outermargin and slightly incurved at veins 2 and 6 and getting narrower towards anal angle; terminal line, spots and cilia as in fore wing. Underside pure white, except where markings of upperside shine through it.

♀ like ♂, but larger and with the wings a little broader. Exp.: ♂ type, 34 mm., ♀ type, 38 mm.; other specimens, ♂, 30—35 mm., ♀, 32—38 mm.

Habitat.—♂ and ♀ types from Central Ceram, Manusela, 6,000 feet, October-December, 1919, seven other specimens from same locality; also a ♀ from Ninay Valley, Central Arfak Mountains (Dutch New Guinea), 3,500 feet, November, 1908 to January, 1909, and one ♂ from Island of Mioswar, Geelvink Bay (North New Guinea), September, 1909, all collected by C. and F. Pratt.

I have much pleasure in naming this species after the collectors who have sacrificed so much to advance our entomological knowledge of tropical regions.

50. *Margaronia brevimarginata* sp. nov.

This species mostly resembles in appearance and size *M. laceritalis* Kenr., but is at once distinguished from it by the male having a tuft

of hairs on the hind wing on the underside and also in the narrower outer marginal borders of both wings. By this tuft it also differs from *M. suralis* Led., with which it agrees mostly in its outer marginal bordering, besides being much larger than *suralis*; it also resembles what I take to be *M. brunneomarginalis* Kenr., but it is much larger and the outer margins of both wings are as in *laceritalis*.

♂. Second and third joints of palpi, head, antennae, thorax, abdomen and wings on upperside chrysolite-green (xxxi); first joint of palpi, femora and tibiae of legs, thorax and abdomen, and basal parts of both wings on underside pale turquoise-green (vii); remainder of fore wing and the greater part of the hind wing underneath reed-yellow (xxx); fore tibiae largely and hind tibiae slightly covered with rather long mummy-brown (xv) hairs; tarsi white, tinged on inner side with cream colour (xci); second and third joint of palpi at base and at tips covered with mummy-brown hairs. Fore wing with the costa beyond middle edged with antimony-yellow (xv) scaled towards apex with mummy-brown; a small fuscous spot in cell at two-thirds and one a little larger at end of cell; outer margin very oblique and roundly lobed at 1b, 4 and 7; outer marginal area slightly tinged with antimony-yellow and narrowly scaled with mummy-brown (much narrower than in *laceritalis*) and some mummy-brown rays from it between veins 1 to 4; cilia mummy-brown at one-third, tipped with brown at 1b, with white to near vein 3, then rood's brown (xxviii) to vein 5, white to vein 6 and from there rood's brown to apex. Hind wing with costal area white; a rather large fuscous spot at lower angle of cell; outer margin somewhat rounded and roundly lobed at 1b, 3 and 7; outer marginal area slightly tinged with antimony-yellow and narrowly scaled with mummy-brown; cilia white, basal half with rood's brown scales and opposite veins 1b, 1c, 3 and beyond 6 entirely rood's brown; inner marginal area white and with long white hairs. Underside: outer marginal area as above, except for a rood's brown suffusion at tornus of fore wing; hind wing more broadly suffused at apex with rood's brown than in fore wing at tornus; a tuft of long apricot-yellow (iv) hairs between veins 1c and 6 beyond discocellulars; abdomen above with some mars-brown (iii) scaling, laterally on last two segments and dorsally on last segment; on underside last segment almost entirely scaled with mars-brown and some mars-brown scales on next two segments; anal tuft fuscous-black (xlvi). ♀ like ♂ in colouring and markings, except outer marginal markings not being

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as dark as in ♂ and on underside of hind wing there is no tuft of hairs; ♀ also somewhat larger than the ♂.

Exp. ♂ type, 49 mm., ♀ type, 51 mm.; other specimens, ♂ ♂ 46-50 mm., ♀ ♀, 47-51 mm.

Habitat.—Central Ceram, Manusela, 6,000 feet, October-December, 1919, seven ♂ ♂, ten ♀ ♀ (including types). C., F. and J. Pratt. In coll. Janse.

51. *Agathodes modicalis* Guen., "Delt. and Pyr.," p. 210 (1854).

Central Ceram, Manusela, 6,000 feet, October-December, 1919. One specimen.

52. *Heortia dominalis* Led., *Wien. ent. Mon.*, p. 402 (1863).

Central Ceram, Manusela, 6,000 feet, October-December, 1919, and Central Ceram, 3,000 feet, December, 1919. Thirty-six specimens.

53. *Polythlipta globulipedalis* Walk., *Cat.*, xxxiv, p. 1359 (1865).

Central Ceram, 3,000 feet, October-November, 1919. One specimen.

54. *Polythlipta divaricata* Moore, "Lep. Ceyl.," iii, p. 311, pl. clxxix, fig. 16 (1886).

Central Ceram, 3,000 feet, January-February, 1920. One specimen.

55. *Polythlipta macralis* Led., *Wien. ent. Mon.*, p. 389, pl. xii, fig. 14 (1863).

Central Ceram, 6,000 feet; Manusela, October-December, 1919. Ten specimens.

56. *Polythlipta camptozona* Hmps., *Proc. Zool. Soc. Lond.*, p. 501, pl. xli, fig. 2 (1910).

Central Ceram, Manusella, 6,000 feet, October-December, 1919. One specimen.

57. *Crocidolomia suffusalis* Hmps., "Ill. Het.," viii, p. 135, pl. clv, figs. 4, 12 (1891).

Central Ceram, Manusela, October-December, 1919. One specimen.

58. *Thliptoceras androstigmata* Hmps., *Ann. Mag. Nat. Hist.* (9), i, p. 279 (1918).

Central Ceram, Manusela, 6,000 feet, October-December, 1919. Three specimens.

59. *Thliptoceras octoguttalis* Feld., "Reise Nov.," pl. cxxxv, fig. 38 (1875).

Central Ceram, Manusela, 6,000 feet, October-December, 1919.
One specimen.

60. *Archernis ignealis* Walk., Cat., xxxiv, p. 1423 (1865).

Central Ceram, 4,600 feet, January, 1920. One specimen.

61. *Maruca testulalis* Hübn., "Samml. Exot. Schmett.," iv, 4, p. 12, ff. 629, 630 (1832).

Central Ceram, Manusela, 6,000 feet, October-December, 1919.
One specimen.

62. *Tetridia caletoralis* Walk., Cat., xviii, p. 651 (1859).

Central Ceram, 3,000 feet, October-November, 1919. One specimen.

63. *Polygrammodes spilosomoides* Moore, "Lep. Ceylon," iii, p. 324, pl. clxxxiii, f. 10 (1886).

Central Ceram, 4,000 feet, January-February, 1920. One specimen.

64. *Psara rubricostalis* Janse, nom. nov.

Pyrausta punctilineata Roths., "Lep. B. O. U. and Woll. Exp. in Dutch New Guinea," p. 144 (1915) (nec "South, Lep.," 1901).

Central Ceram, Manusela, October-December, 1919. Two specimens.

65. *Psara platycapna* Meyr., *Trans. Ent. Soc. Lond.*, 1897, p. 90.

Central Ceram, Manusela, 6,000 feet, October-December, 1919.
Three specimens.

66. *Prooedema incisalis* Walk., Cat., xxxiv, p. 1410 (1865).

Central Ceram, Manusela, 6,000 feet, October-December, 1919. One specimen.

67. *Hapalia ablactalis* Walk., Cat., xviii, p. 660 (1859).

Central Ceram, Manusela, 6,000 feet, October-December, 1919.
One specimen.

68. *Pyrausta deductalis* Walk., Cat., xviii, p. 659 (1859).

Central Ceram, 3,000 feet, January-February, 1920. One specimen.

69. *Pyrausta signatalis* Walk., Cat., xxxiv, p. 1444 (1865).

Central Ceram, 3,000 feet, January-February, 1920. One specimen.

HYDROCAMPINAE.

70. *Margarosticha pulcherrimalis* Led., *Wien. ent. Mon.*, p. 454, pl. xviii, f. 11 (1863).

Central Ceram, Manusela, 6,000 feet, October-December, 1919.
One specimen.

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71. *Aulacodes acroperalis* Hmps., *Trans. Ent. Soc. Lond.*, p. 177 (1897).

Central Ceram, Manusela, 6,000 feet, October-December, 1919. Eight specimens.

72. *Talanga sexpunctalis* Moore, *Proc. Zool. Soc. Lond.*, p. 616, pl. lx, f. 12 (1877).

Central Ceram, Manusela, 6,000 feet, October-December, 1919. Eight specimens.

73. *Dracaenura horochroa* Meyr., *Trans. Ent. Soc. Lond.*, p. 229 (1886).

Central Ceram, Manusela, 6,000 feet, October-December, 1919. One specimen.

74. *Cymoriza gigantalis* sp. nov.

I have a little doubt as to the correct position of this species, but it agrees better with *Cymoriza* than with any other genus known to me. The frons is not with a rounded prominence as given for this genus by Hampson, but neither in *irrectalis*, type of the genus, nor in *ustalis* is this rounding very prominent. Vein 10 is in the ♂ free, a character not given by Hampson, but mentioned by Guenée and by Lederer, also it does not have the glandular swelling on the costa of the fore wing.

This species differs from the two others not only in pattern, but can be distinguished at once by the larger size, which is about twice that of the ♂ ♂ of the other species.

♂. Wings whitish, more or less heavily scaled with tawny (xv), so as to leave silvery-white maculae and maculated lines; in two specimens these tawny scales are lighter in colour, as if they are bleached or rubbed, in one other specimen the scaling is very dark, more of a chestnut-brown (xiv); thorax and abdomen with tawny scales, tegulae and patagia with tawny hairs; abdomen above with a white ring on first and third segments anteriorly, with small white maculae on third to sixth segment posteriorly; palpi on innerside and thorax on underside with tawny hairs; frons and tuft on antennae white; palpi with second joint in front and the tip of third joint covered with white scales; fore legs covered on outside with fuscous (xlv), tarsi ringed with tawny; femora of other legs with patch of tawny scales in middle, tibiae at middle and end with such a patch, tarsi ringed with tawny.

Fore wing with a small white patch at base near innermargin; subbasal line irregular, beginning below costa as a semicircular ring, having an indentation on 1*b* and some fuscous scales on outer side; medial line double, first line narrow and bordered outwardly with black scales, and beginning as two narrow inwardly oblique maculae in cell, then an inwardly curved line below cell, which is continued along innermargin for a short distance; the second line consists of three broad maculae, first ill-defined and between costa and upper median, second in and just below cell and sharply indented inwardly at lower median, third as an elongate mark from vein 2 to 1*b*; two spots beyond upper and lower angle of cell; postmedial line ill-defined, narrow and with narrow dark scaling before and beyond it; from costa to vein 7 a white patch before and beyond it; postmedial line slightly incurved from costa to vein 5, then oblique to inner margin and slightly dentate inwardly on the veins; subterminal line consists of white maculae defined on the outer side by a distinct black line, and extends from vein 8 to 1*b*, curved inwardly at vein 6, outwardly at 4 and curved inwardly between veins 4—3, 3—2, and 2—1*b*; the small white maculae are between 8—7 and on 6, larger and triangular on median fold and very small on vein 5; a macula of black scaling mixed with some white scales on vein 4; a small white triangular macula between veins 2—3 and an inwardly bidentate macula between veins 2 to 1*b*; a light-buff (xv) terminal patch from apex to above vein 4 extending half-way on cilia; remainder of wing well covered with tawny scales; cilia tawny with a darker basal line.

Hind wing with white base and white costal medial area as far as postmedial line and reaching to lower median; an ill-defined subbasal tawny line; a double similar antemedial scaling in cell and a similar oval ring at end of cell; area below lower median as far as postmedial line covered with tawny scales and hairs, leaving a small and larger white macula between veins 1*a* and 1*b*; two more whitish maculae before postmedial line between 1*b*—1*c*, and 2—3; postmedial line tawny, followed by an ill-defined whitish line, straight and oblique from costa to medial fold, then curved outwardly from fold to vein 2, then oblique to tornus; subterminal line as in fore wing, but white line lunulate between the veins, small and ill-defined from costa to vein 4, larger and better defined between veins 4—3, 3—2, 2—1*c*, 1*c*—1*b*; cilia tawny with a darker line in middle.

Underside: Fore wing white, scaled along costa beyond medial line with cinnamon-buff (xxix) scales; lines of chestnut (ii) scales; subbasal

from costa to 1b, angled outwardly at uppermedian and plical fold; some chestnut edging along costa to antemedial; antemedial from costa to below upper median very oblique outwardly, then very oblique inwardly to vein 1b and sharply angled inwardly on upper median and bluntly angled at lower median; at plical fold some dark scaling forming an ill-defined spot; an oval annulus beyond discocellulars as on upperside, but lines narrower and better defined; some chestnut-brown scaling beyond it from veins 6—8; postmedial line double as on upperside, outer line indistinct between veins 5—1b; on each line some dark scaling on plical fold, forming two ill-defined maculae; subterminal line as on upper side, but more seal-brown (xxxix) than black. Hind wing white, well suffused with cinnamon-buff, except the white maculae and an area at inner margin between antemedial and medial lines; all lines chestnut; subbasal ill defined; antemedial well defined and curved outwardly from costa to inner margin and somewhat dentated; between vein 2 and inner margin a broad heavily scaled chestnut line; annulus as on upperside; postmedial as on upperside, but narrower and with only a slight shading beyond it, indicating the second line; the postmedial runs parallel to outer margin, is outwardly dentate on veins 7, 6, 4, 3 and 2, then obsolete but preceded by heavy chestnut scaling to inner margin as in antemedial line; the postmedial line is dentate inwardly at discal fold; subterminal as on upperside, but much less defined; cilia as on upperside.

Exp. ♂ type, 43 mm.; other specimens 42 mm.

Habitat.—♂ type, Central Ceram, Manusela 6,000 feet, October-December, 1919.

Three other ♂♂ from the same locality. One of these three is much darker in coloration, it is also minus the abdomen, but I have little doubt that it is also a ♂. All collected by C., F. and J. Pratt.

POCOCERINAE.

(EPIPASCHIANAE.)

The genus *Epipaschia*, type *superatalis* Clem. is certainly a synonym of *Macalla*, type *thyrsialis* Walk. If the family name is to be based on a valid generic name only and not on a synonymic name, it is clear that the old name cannot be retained, and I therefore adopt the change proposed by Sir George Hampson.

75. *Orthaga seminivæa* Warr., *Ann. Mag. Nat. Hist.* (6), xvi, p. 463 (1895) (var.). Central Ceram, 3,000 feet, January-February, 1920. Thirteen specimens.

I do not possess the typical *seminivea* but a var. that even comes closer to it than the specimens from Ceram, and I have little doubt that they will prove co-specific. I see no reason, however, why *seminivea* and *leucophota* should come in the genus *Orthaga* as the neuration is quite different from the type of the genus, *O. equadrusalis* Walk., apart from other different characters. In these two species vein 6 of fore wing is shortly stalked with 7, 8, 9; 10 anastomoses with stalk of 7, 8, 9, just before the place where 7 comes off the stalk and thus forms a large areole. I do not find this areole in any other typical *Orthaga* known to me.

76. *Orthaga rudis* Walk., *Trans. Ent. Soc. Lond.* (3), i, p. 115 (1862).
Central Ceram, 3,000 feet, January-February, 1919. One specimen.

77. *Orthaga chionalis* Kenr., *Proc. Zool. Soc. Lond.*, p. 73, pl. iii, f. 33 (1907).

Central Ceram, 3,000 feet, January-February, 1919. One broken specimen.

PYRALINAE.

78. *Cosmethis talboti* sp. nov.

This species comes very near to *Cosmethis zemire* Cram. and *C. vitialis* Hmps. From the former it differs in the fore wing having the whole area between antemedial line of *zemire* and its postmedial patch inclusive entirely filled up with whitish scales, thus forming one white patch, which, however, does not reach quite as far as outer edge of postmedial patch in *zemire*; the basal yellowish scales are also much reduced below lower median and there is a blackish bar or elongated spot across it between costa and lower median; veins also more streaked with whitish and one-third of cilia of hind wings white. From *vitialis* it differs, judging from the description, in having one broad band instead of narrow antemedial line and postmedial patch, and in the cilia of the fore wings not being white.

♂. Fore wing and hind wing above and below, abdomen, legs, proboscis, antennae and tip of palpi black, in fore wing and less in hind wing with a bluish metallic sheen; hairs on thorax, patagia, tegulae, head and palpi deep-chrome (iii); abdomen with all segments, except the first, narrowly edged above and more broadly on underside with white scales; anal tuft of hairs deep-chrome; femora streaked on outer side with whitish scales and tibia tipped with it; palpi with the second joint on inner side of upper half and the whole of the third joint black.

Fore wing with a patch of deep chrome hairy scales from near costa to a little beyond lower median, except at middle third, which remains of ground-colour; a broad whitish slightly oblique patch from antemedial to a little beyond discocellular from upper median to inner margin, and extended to vein 12 as far as well beyond middle, patch broadest near costa and slightly irregular on inner and outer sides; a little white scaling beyond the patch towards costa; veins 1*b* to 8 and submedian fold streaked with white scales from white patch to outer-margin, this scaling becomes less heavy on submedian fold and 1*b*; cilia fuscous (xlvi).

Hind wing without markings; cilia fuscous at base and for two-thirds white.

Underside: In fore wing a white patch as above, but less densely scaled and narrower, beginning just before discocellulars, where the edge is diffused and extended for the same distance beyond these veins, outer edge well defined, straight, outwardly oblique to submedian fold and then sharply curved inwardly to inner margin, some white scaling on veins at apex and tornus. Hind wing with some white scaling on portion of veins 5-8, for longest distance and most heavily towards the apex; cilia as above. ♀ like ♂ in markings, but branches of antennae shorter, specimens slightly larger.

In both sexes veins 4 and 5 of fore wing are shortly stalked, of hind wing approximated.

Exp. ♂ type 55 mm., ♀ type 56 mm.; other specimens 54—56 mm.

Habitat.—♂ and ♀ types and one other ♂ and two other ♀ ♀ from Central Ceram, Manusela, 6,000 feet, October-December, 1919, C., F. and J. Pratt.

ENDOTRICHINAE.

79. *Endotricha variabilis* sp. nov.

♂. Head, thorax, part of abdomen, fore wing and apical half of hind wing brick-red (xiii); vertex of head mixed with yellow hairs and first three segments of abdomen yellow irrorated with brick-red; anal tuft ochraceous-buff (xv). Fore wing with a series of orange-buff (iii) spots along costa, which are elongated at first half and getting triangular beyond; antemedial line oblique and indistinct from costa to lower median, then erect, distinct, slightly incurved at 1*b* and consisting of fuscous-black (xlvi) scales, beyond it from lower median to inner margin an apricot-yellow (iv) band, diffused and irrorated outwardly; some

fuscous-black scaling at end of cell and area between antemedial and subterminal lines sprinkled with fuscous-black; subterminal line orange-yellow (iii), suffused with brick-red and bordered on both sides by narrow fuscous-black lines, erect, evenly curved outwardly, slightly incurved at vein 5 and on plical fold and ending near tornus; terminal line represented by a series of black lunules between the veins and subterminal area thinly irrorated with fuscous-black scales; cilia of brick red and fuscous scales mixed, with a fuscous-black line at one third. Hind wing apricot-yellow at basal half, along costa and inner margin; this part is defined outwardly from before apex obliquely towards discocellulars, then erect to 1c above outer margin, then sharply angled to tornus; a faint orange-vinaceous scaling before this, defining line below lower median and near tornus, indicating the antemedial line; area beyond the yellow orange-vinaceous to outer margin: a series of black terminal lunules between the veins which become a black terminal line from before vein 2 to tornus; cilia apricot-yellow mixed with orange-vinaceous from apex to vein 2, and with a dark line at one third, brick-red from apex to vein 3, then fuscous-black to tornus.

Underside: Both wings buff-yellow (iv). Fore wing densely irrorated with corinthian-red (xxvii), broadly along costal half till below lower median and vein 2, and beyond subterminal line from apex to tornus; costa narrowly edged with fuscous-black interrupted by small orange-buff spots as on upperside; some triangular scaling before discocellulars; subterminal line as on upperside, but more irregular and more distinct, especially the inner line; black terminal spots and cilia as on upperside. Hind wing with the costal area as far as medial fold and area beyond medial line to near tornus densely irrorated with corinthian-red; indications of an antemedial line from costa to 1c; medial line as on upperside, but more irregular, more roundly curved at vein 2; dentated inwardly at vein 3, and above veins 5 and 6, outwardly at below vein 4, medial fold and above vein 6; a buff-yellow line beyond it; terminal black spots between the veins narrow and becoming very elongate towards tornus; cilia as on upperside, but less dark.

♀ like ♂, but fore wing and hind wing more of a testaceous (xxviii) colour, and thinly irrorated with fuscous-black scales; antemedial yellow of fore wing narrower, basal area of hind wing suffused with testaceous as far as antemedial line and more roundly defined near tornus than in ♂ on upper side. The ground colour of the wings of the ♀ ♀ varies considerably, ranging from avellaneous (xl) to brick-red as in ♂. Underside as in ♂, but lines darker and more defined; medial line of hind wing more deeply incurved at medial fold.

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Exp. ♂ type, 32 mm.; ♀, 35 mm.; other ♂ specimens, 28—32 mm.; ♀ specimens, 30—35 mm.

Habitat.—All from Central Ceram, Manusela, 6,000 feet, in October-December, 1919, collected by C., F. and J. Pratt. Besides the types, eight ♂ paratypes and eight ♀ paratypes; twenty-six other specimens in rather poor condition.

This species comes in Hampson's Section II B (b); antennae are normal and biciliated in the ♂; veins 4 and 5 of both wings are closely approximated. The outer margin of the fore wing is in the ♂ slightly incurved at plical fold.

80. *Endotricha simplex* sp. nov.

♂. Fore wing, head, palpi, thorax, abdomen and legs vinaceous-rufous (xiv); anal tuft light orange-yellow (iii). Fore wing of an almost uniform colour, except along costa, which is darker; whole wing slightly sprinkled with black scales; a series of small light orange-yellow spots along costa; basal area slightly irrorated with light orange-yellow scales; antemedial line oblique and almost straight, faintly indicated by a darker line than the ground-colour and scaled outwardly with light orange-yellow scales; some black scaling at discocellulars; subterminal line thin, light orange-yellow and curved outwardly near apex, then obliquely to tornus and slightly lunulate between the veins; small black terminal spots between the veins from above vein 3 to apex; cilia vinaceous-rufous at basal half, then light orange-yellow. Hind wing maize-yellow (iv) at basal area, suffused with vinaceous-rufous at outer half from 1c to apex and along inner-margin at between 1a and 1b; some light orange-yellow scaling between 1b and 2, covering the whole of the area near the tornus; an indistinct maize-yellow postmedial line from near costa to vein 2, then curved and obsolete to tornus, near which it becomes more distinct; some fine black terminal points; cilia as in fore wing, but basal half tipped with black from 1b to vein 3.

Underside: Fore wing with ground colour as on upperside, but less dense, especially between inner margin and 1b; spots along costa as on upper side, but costa itself only narrowly edged with fuscous-black; black irroration very thin and only at medial area from vein 2 to costa near subterminal line; black scaly macula at discocellulars; subterminal line more distinct than on upperside, double, dentate inwardly on the veins, first line orange-buff (iii), second line light orange-yellow; veins 2—7 and costal area beyond it streaked with

orange-buff; black points at termen and cilia as on upperside. *Hind wing* with the ground colour light orange-yellow, suffused between medial fold and costa and beyond postmedial line with orange-vinaceous; costal area sprinkled with black scales; veins tinged with light orange-yellow; antemedial line indistinct below lower median only and orange-vinaceous; postmedial line orange-vinaceous bordered outwardly with light orange-yellow, well curved and dentate outwardly between veins 2—3, 5—6, 6—7; terminal spots and cilia as on upperside.

♀ like ♂, but ground colour wood-brown (xl) in fore wing, tinged terminally with vinaceous-fawn (xl); terminal half of hind wing suffused with vinaceous-fawn and basal area cream coloured (xvi); line in fore and hind wing obsolete; in hind wing the medial line consists of a fine fuscous scaling. Underside with markings as in ♂ but ground colour cream, suffused with vinaceous-fawn; subterminal of fore wing double and consisting of fine black scaling; postmedial line of hind wing also double and made up of a blackish irroration; streaking of veins light orange-yellow. Head, palpi, thorax, legs and abdomen warm-buff (xv).

Exp. ♂ type, 30 mm., ♀ type, 29 mm., ♂ paratypes, 26—29 mm.; ♀ paratypes, 27—30 mm.

Habitat.—All specimens from Central Ceram, Manusela, 6,000 feet, October-December, 1919. Four ♂ ♂ and nine ♀ ♀, all collected by C., F. and J. Pratt.

This species also comes in Hampson's Section II B (b); the antennae are normal and biciliated in the ♂; veins 4—5 of fore wing are very closely approximated.

NEW FORMS OF BUTTERFLIES FROM BURU.

BY J. J. JOICEY, F.Z.S., F.E.S., &C., AND G. TALBOT, F.E.S.

(Numbers 1 to 8 reprinted and amended from "The Entomologist," vol. lvi, pp. 26-28, February, 1923.)

THE forms herein described were collected by the brothers F., C. and J. Pratt, in the Island of Buru during 1922. The types are in the Hill Museum, Witley.

Family PAPILIONIDAE.

1. *Papilio (Troides) prattorum* J. and T., f. *mixtum* f. nov.

♂. Shape of wings as in *prattorum*. Fore wing with the vein stripes faintly marked on both sides. Hind wing with the base black, but to a less extent than in the *helena* form; marginal area more broadly black than in typical *prattorum*, more especially below vein 6; the tooth on vein 4 shortened and dusted with black, this being the only vestige of the black dusting seen in the typical form. The cell of the hind wing is a little broader, somewhat as in *helena*. Abdomen ventrally with only slight black hair and more yellow scaling. The claspers are grey instead of black, being a little darker than in *helena*. The yellow area of the hind wing on both sides slightly opalescent.

Habitat.—South coast of Buru: Lek Soela, February-March, a single specimen.

This remarkable specimen partakes of the character of both *prattorum* and *P. helena bouruensis* Wall.

Family PIERIDAE.

2. *Delias prouti* sp. nov. (pl. VI, figs. 1, 2).

♂. Upperside white. Costa and outer margin of fore wing and outer and inner margin of hind wing very narrowly edged with black. Fringes black. Underside of fore wing with black ground-colour, a grey-white basal half, and large apical yellow spots from costa to vein 3. Hind wing with a long brick-red basal stripe in 7 as in *joiceyi*, the

cellule grey-white. A brick-red unbroken discal band, straighter and thicker than in *joiceyi*; this band edged proximally by a black band not exceeding it in thickness, but variable and sometimes half as wide. Basal half between inner margin and vein 7 olive-yellow; a white flush of variable extent, and mostly tinged with pink, borders the red band in the distal area, which is bright yellow.

♀. Upperside black with basal half of both wings dusted with olive-yellow, and inner margin of hind wing grey-white. Fore wing with five creamy subapical spots in 3, 4, 5, 6 and 8, divided by the veins. Underside as in the ♂, but fore wing with larger yellow patches and darker basal scaling. Hind wing with distal area stone-grey and a narrow marginal border of yellow on the lower half.

Length of fore wing: ♂ ♀, 32—36 mm.

Habitat.—West Central Buru, Gamoe 'Mrapat, 5,000 feet, April. A series of ♂ ♂ and a few ♀ ♀.

This very striking species is allied to *joiceyi* Talb., from Ceram.

3. *Delias schmassmanni* sp. nov. (pl. VI, figs. 5, 6).

♂. Upperside white with the fringes black at the veins. Fore wing with the apical margin narrowly black. Underside of fore wing with the apical area benzo-brown (Ridgway, pl. xlv), ground-colour black. A postdiscal band of pale yellow, of variable width, much broader posteriorly and joined to the white inner margin. A small yellow costal spot in cellule 8. Hind wing benzo-brown. A yellow postdiscal band, deeper in colour than on the fore wing and variable in width, broadening posteriorly to join the brighter yellow inner margin. Six yellow and rounded marginal spots, those in 2 and 3 much larger than the others. Costal edge narrowly yellow from base to postdiscal band.

♀. Upperside white, with broad black margins. Fore wing with black apical area narrowing below vein 3, and bearing four white apical spots. Costa narrowly black, and discocellular black. Hind wing with the black outer margin narrowing posteriorly, and bearing five indistinct marginal yellow spots.

Underside as in the ♂, but fore wing with the apical spots reproduced and some yellow dusting over the cell.

One specimen has a narrower black margin on the hind wing, not reaching below vein 4.

Length of fore wing: ♂ ♀, 37—39 mm.

Habitat.—West Central Buru, Gamoe 'Mrapat, 5,000 feet, April. A small series with about an equal number of both sexes.

This species appears to be related to *manuselensis* Talh., from Ceram.

4. *Delias apatela* sp. nov. (pl. VI, figs. 7, 8).

♂. Upperside of fore wing with white basal half and black distal half. Two or three small white apical strigae. Hind wing white with a black outer margin. Underside of fore wing black, inner margin white, base dusted with yellow, succeeded by a white powdering. Five white apical spots, the middle one the larger. Hind wing yellow, darker than in *rothschildi*, but paler at the base. A submarginal black line, somewhat crenulate at its distal edge, and bordered by a white line on its inner edge. The veins between the submarginal line and margin are narrowly black. Traces of white scaling in the cell.

♀. Upperside with white area reduced. Underside as in the ♂, but with the marginal line more heavy.

Length of fore wing: ♂ ♀, 30 mm.

Habitat.—Central Buru: Kako Tagalago, 2,700 feet, May; Koen-toeroen, 3,500 feet, April; River Pohatiga, 3,000 feet, April. A small series with four ♀ ♀.

This interesting form closely resembles *D. rothschildi* Holl., and flies with it. It is confined to the interior, but *rothschildi* has a wider range and occurs at the coast. Easily distinguished by the uniform yellow colouring of the hind wing below and especially by the black submarginal line being narrowly edged with white on the inside.

5. *Delias eschatia* sp. nov. (pl. VI, figs. 4, 5).

♂. Upperside white. Fore wing with costa narrowly black, but broadening towards the black apex. Four small white subapical spots contingent upon the white area. Hind wing white but with dark underside showing through. Outer margin with a thin black line and black fringe. A narrow marginal border of black dusting. Underside of fore wing white, with broader costal and apical fuscous than above. Four yellowish-white subapical spots. Base dusted with yellow. Hind wing fuscous. Cellule 8 dusted with yellow, also the inner margin. A submarginal row of six dark yellow spots.

♀. Upperside of fore wing white. A broad costal and apical black area with five white subapical spots. Hind wing grey-white with a broad black outer margin, narrowing posteriorly. Underside as in ♂, but fore wing with broader apical black and larger spots.

Length of fore wing: ♂ ♀, 30 mm.

Habitat.—Buru, Koentoeroen, 3,500 feet, April, two ♂ ♂, four ♀ ♀. This species is apparently allied to *stressmanni* Roths., from Ceram.

6. *Delias vidua* J. and T. ♂ (pl. VII, figs. 7, 8).

♂. Upperside white. Fore wing with broad black apical area and costa narrowly black. Hind wing with broad black distal area, in cellules 2 and 3 with indistinct triangular prolongations. The black dusting along the edge of the white area is more uniform but less strongly present than in *isse echo*. Underside with fuscous black ground-colour. Fore wing with apical area somewhat as in *echo* but broader; proximal area pale yellow, paler still posteriorly. Five small submarginal spots in 3, 4, 5, 6 and 8, the two anterior ones the larger. Hind wing with a submarginal series of six yellow spots, the one in 6 the larger, the others uniform and somewhat linear. Base to near middle of cell and cellule 8 dusted with yellow, inner margin yellow.

Length of fore wing: 33 mm.

Habitat.—West Buru, River Pohatiga, 3,000 feet, April, a single ♂ only.

Now that we have the ♂ of this curious form, closely resembling *isse echo* Wall. in both sexes, we may venture to regard it as a relative of *caliban* Sm., British New Guinea.

Family NYMPHALIDAE.

7. *Dichorragia ninus* Feld., *buruensis* subsp. nov.

♂ ♀. Upperside of fore wing with spots better defined and slightly larger. Ground-colour darker-green. Hind wing darker than in *ninus*, the green markings replaced by blue and larger in the ♂, in the ♀ smaller, but owing to increase in size of the white patches. Black marginal border narrower. Underside of fore wing with spots distinctly larger than in *ninus*. Hind wing with blue discal spots more prominent, the white patches larger, and the black ocelli more strongly edged with lilac distally.

Habitat.—West Buru; En Beloro, 1,670 feet, March, ♂ ♀; Kako Tagalago, 2,700 feet, May, one ♀.

8. *Charaxes madensis* Roths. ♂ (pl. IX, figs. 4, 5).

Entomologist, xxii, p. 172 (1899) (Mount Mada, Buru) ♀.

Nov. Zool., vi, t. 8, f. 4 (1899); vii, p. 346 (1900).

♂. Upperside of the fore wing with black ground-colour, and chestnut-brown markings. Basal area chestnut-brown, joined at the submedian to a lighter postdiscal band reaching vein 3; this band indistinct distally, and representing in shape and area the band of the ♀, its outer part above vein 2 only indicated by indistinct spots, its inner part more distinct, above vein 3 only indicated by a large spot in 3 and a larger one in 4. The anterior part of the band seen in the ♀ is represented in the ♂ by two ovate spots in 5 and 6, only distinct proximally. Hind wing marked as in the ♀, but the band broader and creamy-white. Distal margin narrower, and the black patches more separated by the chestnut ground-colour, which forms a darker narrower marginal edge. Underside walnut-brown (Ridgway, pl. xxviii), markings somewhat as in the ♀, but no white marks. Fore wing with postdiscal line not waved as in the ♀, but sinuate and curved outwardly in cellule 5. Hind wing with the postdiscal band less strongly waved than in the ♀, narrower and of a darker brown than the ground-colour. Distal border paler than the ground-colour and a narrow marginal border as in the ♀.

Length of fore wing: 49 mm.

Habitat.—South coast of Buru, Lek Soela, February–March, one ♂, one ♀; West Central Buru, Kako Tagalago, 2,700 feet, April, one ♂, one ♀; Mount Tagalago, 2,000 feet, April, one ♂, one ♀; Koentoeroen, 3,500 feet, April, one ♂.

The discovery of the ♂ of this species shows it to be a form distinct from *mars* Stgr., to which it has been assigned. Its nearest ally must be *eurialus* Cram., from Ceram and Amboina.

The following were not described in the *Entomologist* :—

9. *Papilio ulysses ampelius* Roths. ♀.

Nov. Zool., xv, p. 174 (1908) (Buru).

Resembles typical *ulysses* from Ceram, but with more blue, especially on the hind wing. Fore wing with a larger patch at end of cell and mostly with more blue scaling along lower half of cell. Hind wing with the blue more extended, in cellule 5 mostly reaching the submarginal lunule.

Underside of fore wing.—The inner edge of the distal white area is irregular below vein 5. Hind wing with a broader pale marginal area.

Described from a series of six taken at Kako Tagalago, 2,700 feet, May (neallotype) ; Mount Tagalago, 2,000 feet, April ; south coast, May.

Also thirteen ♂♂ from Lek Soela (coast), February-March ; south coast, May ; Kako Tagalago, 2,700 feet, May ; Mount Tagalago, 2,000 feet, April.

10. *Cynthia erota buruana* Fruh. ♀.

C. arsinoë buruana Fruh., *Iris*, xiv, p. 329 (1901) (Buru) ♂.

We find that this form has more in common with *erota* than with *arsinoë*, in both sexes. The *arsinoë* forms have a more broken discal line on the fore wing, this line being fairly straight and sharply indicated in *erota*.

The genus required further revision, like so many others which were apparently treated hastily in Seitz.

♀. Resembles *erota* forms in the narrow discal band with its sharply defined inner edge. The band white and 5—6 mm. broad, its outer edge scalloped and bordered with black. Postdiscal black spots few and a > shaped mark in cellule 4 and a smaller fifth spot in cellule 6. A small rounded white subapical spot. A postdiscal heavy black waved line, and a thinner submarginal line. Basal area greenish-brown and darker than the smoky-brown discal area.

Hind wing with white discal band, sometimes dusted with brownish scaling, from 9—10 mm. broad at the costa, narrowing posteriorly to the anal angle. The inner edge of this band sharply defined and only slightly irregular, the outer edge clouded with greenish-brown, fairly straight, and with a heavy and strongly waved line within it. A heavy black waved submarginal line between which and the discal band the area is dusted with yellow-brown. A black antemarginal line.

Submarginal area yellow-brown with more or less lilac dusting mostly along the outer edges of the submarginal lines. Two large ocelli in 2 and 5, black with orange-yellow ring and thin black outer edge, pupil bluish-white. A smaller anal ocellus, its lower part joined to the submarginal line which here ends in a chocolate-brown spot. Tail well developed.

Underside colouring much as in *arsinoë* ♀ though paler and ocelli smaller and with the anal ocellus well marked. The lines and bands of the upperside are less heavily marked on the underside and are as in the ♂.

Length of fore wing 52—61 mm.

A series of both sexes from Kako Tagalago, 2,700 feet, May ; Gamoe 'Mrapat, 5,000 feet, April ; Koentoeroen, 3,500 feet, April ; Lek Soela (coast), February-March.

A CATALOGUE OF THE LEPIDOPTERA OF HAINAN.

BY J. J. JOICEY AND G. TALBOT.

PART I.

1.—INTRODUCTION.

THE island of Hainan lies in the Gulf of Tonking, and is separated from the Liu-chow Peninsula by a narrow strait. The island is about 175 miles long and about 100 miles wide. The climate is unhealthy and the country rough and mostly in an unsettled state.

Entomologists who have collected on the island have encountered much difficulty in the interior, chiefly owing to the climate and rough travelling. Only four important collections of Lepidoptera have been made on this island.

In 1878 (*Proc. Zool. Soc.*, p. 695) F. Moore published a list of the Lepidoptera collected by the late R. Swinhoe. He recorded seventy-five forms of Rhopalocera and eight Heterocera which Swinhoe obtained during his ornithological researches in 1868.

In 1887 (*Trans. Amer. Ent. Soc.*, pp. 111-124, pls. i and ii) Dr. W. J. Holland published a list of the forms collected by the Rev. B. C. Henry, and recorded eighty-eight Rhopalocera.

The famous ornithological collector, John Whitehead, visited Hainan in 1889, and unfortunately succumbed to fever in the Five Finger Mountains. He added largely to our knowledge of the birds and made a collection of butterflies which contained several new forms. This collection was made the subject of a paper by Philip Crowley in the *Proc. Zool. Soc.*, 1900, p. 505, pl. xxxv. A total of 106 forms of Rhopalocera is recorded.

Since this paper of Crowley's, no separate list has been published on the Lepidoptera of the island, but many forms have been recorded in periodicals and in the work of Seitz: "The Macrolepidoptera of the Globe."

The catalogue compiled by us now brings the number of different forms of Rhopalocera to over 250, even though some names have had to sink. This increase in our knowledge is due largely to the efforts of

Mr. C. T. Bowring, late Commissioner of Chinese Customs at Hoihow. Mr. Bowring enlisted the services of several Europeans and natives in obtaining specimens from all parts of the island, and special credit is due to Mr. Young Chun and to Dr. Bercovitz. A paper describing twenty-two new forms sent home by Mr. Bowring was published in the BULLETIN OF THE HILL MUSEUM, vol. I, p. 167, 1921. Two further specimens were described in the same journal on p. 353, 1922. We describe as new in the present list *Ixias pyrene hainana* f. *maculosa*.

2.—LOCALITIES.

The journey made by Mr. Chun, and the districts where collections were made, are shown on the map appended to this paper. Mr. Chun went from Hoihow across country to Kimkang, Taifong, Nodia, Faissa and Nodoa. He made Nodoa his headquarters with the American Presbyterian Mission, and visited Tamchou, afterwards making a journey to Nanfong, the "Dome," Fanta, Fanluen, Longmasui, Hamngausui, Fonkiang, Tunglo and Fanza. He then proceeded to ascend the Five Finger Mountains, attaining about 6,000 feet. It was necessary to employ coolies and aborigines to cut a way through the dense forest, and the whole route was broken up by huge boulders. A camp was pitched half-way up, and here Mr. Chun stayed for two months collecting.

Dr. Bercovitz, of the American Mission at Kachek, engaged natives to collect at Mr. Bowring's expense, and collecting was done between Kachek and Leanui, and the Seven Finger Mountains. In this region were obtained the *Anadebis henrici*, *Papilio coon insperatus* and the *Eulaceura*.

Mr. Bowring engaged a Hainan youth to work the country from Hoihow to Dingan, and from Dingan to Leanui. The *Coelites* was taken in this region.

Around Hoihow Mr. Bowring collected a good deal himself, and went west as far as hill 564, which is a volcano extinct since 100 years. He went east as far as Kabeang, and south to Dingan.●

Mr. Bowring had a substation at Yulinkang on the south coast, and from there received among others the *Papilio hipponous bowringi*.

A number of things were received from an American Missionary at Nodoa; these included *Eriboea athamas*.

Specimens noted as from "Interior" were taken in the area covered by Dr. Bercovitz's collectors.

3.—AFFINITIES.

The Lepidopterous fauna has three affinities. Most forms are closely allied to or are identical with Himalayan forms, others are similarly identified with those inhabiting South China, and others again are closely allied to Tonkin and Burmese forms. There is, therefore, a parallel affinity with that of the avifauna (cf. Hartert, *Nov. Zool.*, xvii, p. 189, 1910). We shall give a detailed account of the distribution at the end of the catalogue.

4.—SYNONYMY.

It has been found necessary to sink a number of names in cases where a comparison of large material has shown no constant variation in the Hainan form. The following names are therefore treated as synonyms. An additional list will be given in connection with the second part of this catalogue.

- No. 38. *Prioneris thestylis hainanensis* Fruh.
- No. 43. *Huphina nama hainanensis* Fruh.
- No. 45. *Appias hippoides* Moore.
- No. 47. *Appias indra menandrus* Fruh.
- No. 57. *Terias hainana* Moore.
Terias attenuata Moore.
Terias arcuata Moore.
- No. 68. *Danaida liminiace norinia* Fruh.
- No. 77. *Euploea musa* Swinh.
- No. 78. *Euploea negleyana* Holl.

5.—CATALOGUE OF LEPIDOPTERA.

Forms which are recorded for the first time and those new to science and described elsewhere, are marked with an asterisk.

RHOPALOCERA.

PAPILIONIDAE.

1. *Papilio (Troides) helena spilotia* Roths.

Entomologist, xli, p. 4 (1908) (Hainan).

Interior, September, three ♂♂, two ♀♀, October, one ♀, no date, two ♂♂, one ♀; Leanui, wet month, one ♂; Hoihow, October, one ♀.

2. *Papilio (Troides) aeacus* Feld.

Wien. Ent. Mon., iv, p. 225 (1860); Crowley, *Proc. Zool. Soc.*, p. 509 (1900).

Interior, October, eight ♂♂, three ♀♀, August, four ♂♂, one ♀, September, one ♂; Hoihow, October, four ♂♂.

*3. *Papilio aidoneus* Doubl.

Ann. Mag. Nat. Hist., xvi, p. 178 (1845).

Interior, May, one ♂, June, one ♂, July, one ♂, August, one ♂, September, five ♂♂, one ♀, November, one ♂, two ♀♀; Ileanui, wet month, one ♀; Five Finger Mountains, May, one ♂, June, one ♀.

4. *Papilio dasarada melanurus* Roths.

Nov. Zool., xii, p. 78 (1905) (Hainan).

♀, Joicey and Talbot, *BULL. HILL MUS.*, i, p. 167, pl. xix, fig. 1 (1921) (Hainan).

Interior, August, one ♀

*5. *Papilio coon insperatus* J. and T.

Joicey and Talbot, *BULL. HILL MUS.*, i, p. 168, pl. xix, fig. 2 (1921) (Hainan).

Interior, July, one ♂, September, five ♂♂, one ♀.

6. *Papilio aristolochiae goniopeltis* Roths.

Nov. Zool., xv, p. 167 (1908) (Tenasserim to Hong-Kong).

P. aristolochiae Holland (nec Fbr.), *Trans. Amer. Ent. Soc.*, xiv, p. 123 (1887); Crowley (Nec Fbr.), *Proc. Zool. Soc.*, p. 510 (1900).

Interior, April, three ♂♂, one ♀, May, one ♂, July, two ♀♀, August, one ♂, one ♀, September, one ♂, one ♀, no date, three ♂♂, three ♀♀; Yulinkang, no date, one ♂; Hoihow, March, one ♂, one ♀, no date, one ♂; Five Finger Mountains: Fansa, south-western slope, 5,000 feet, June, one ♂; Nodoa, August, one ♀.

7. *Papilio slateri* Hew

Exot. Butts., ii, Pap., pl. iv (1859); Crowley, *Proc. Zool. Soc.*, p. 510 (1900).

We did not receive this species.

8. *Papilio clytia* Linn.

Syst. Nat., x, p. 479 (1758).

f. saturata Moore.

Proc. Zool. Soc., p. 697 (1878) (Hainan).

P. panope Holland (nec L.), *Trans. Amer. Ent. Soc.*, p. 122 (1887).

Yulinkang, May, one ♀; Interior, September, one ♂, one ♀; Hoihow, May, one ♀, June, one ♂, two ♀♀; Nodoa, August, three ♂♂, three ♀♀; Five Finger Mountains: Upper Huymo Doorg, Huplohr District, April, one ♂; Hanfong, March, three ♂♂; Daidip District, April, one ♂.

Variation.—Hind wing with marginal spots absent, submarginal spots absent or obsolete; underside with marginal spots black or clouded with black, submarginal spots obsolete; three ♂♂, four ♀♀ taken in March, August and September.

Holland, l.c., sinks this under *panope*, but there is no justification for this. In our series there is no specimen with the spots above so well marked as in the mainland forms, and seven out of eighteen are very dark.

f. dissimilis Linn.

Syst. Nat., x, p. 479 (1758).

P. clytia Holl. (nec L.), *Trans. Amer. Ent. Soc.*, xiv, p. 122 (1887).

Hoihow, September 28, 1916 (one ♂ emerged from chrysalis), no date, one ♂, one ♀, May, one ♀, June, one ♂, three ♀♀, August, one ♂; Leanui, wet month, one ♂, one ♀; Five Finger Mountains—Nanfong, March, one ♂, one ♀; Upper Huymo Doorg, Huplohr District, April, one ♀; Nodoa, August, five ♀♀.

***9. *Papilio telearchus* Hew.**

Trans. Ent. Soc. Lond., ii (2), p. 22, t. 6, fig. 3 (1852).

Interior, April, one ♀, May, one ♂, no date, one ♀.

10. *Papilio castor hamela* Crowley.

Proc. Zool. Soc., p. 509, pl. xxxv, fig. 3, ♂ (1900) (Hainan).

Five Finger Mountains, May, one ♂, June, two ♂♂.

11. *Papilio demoleus* Linn.

Syst. Nat., x, p. 464 (1758).

P. erithonius v. *malayana* Holland (nec Btlr.), *Trans. Amer. Ent. Soc.*, xiv, p. 123 (1887).

P. malayanus Moore (nec Btlr.), *Proc. Zool. Soc.*, p. 697 (1878).

Crowley, *Proc. Zool. Soc.*, p. 509 (1900).

Interior, March, one ♂, two ♀♀, April, two ♂♂, July, one ♀,

August, one ♂, September, three ♂♂, one ♀, no date, five ♂♂, two ♀♀; Yulinkang, no date, one ♂; Five Finger Mountains, June, one ♂, one ♀; Nodoo, March, one ♂, August, two ♂♂; Leanui, wet month, two ♂♂; Hoihow, March to November, one ♂.

12. *Papilio chaon chaonulus* Fruh.

Soc. Ent., p. 73 (1902).

P. chaon Crowley (nec L.), *Proc. Zool. Soc.*, p. 509 (1900).

Interior, March, two ♂♂, April, eleven ♂♂, May, twenty-four ♂♂, June, one ♀, July, seven ♂♂, one ♀, August, three ♂♂, September, eight ♂♂, three ♀♀, October, one ♂, one ♀; Yulinkang, one ♂, two ♀♀, no date, May, one ♂; Five Finger Mountains, May, two ♂♂, June, five ♂♂; Hoihow, June, one ♂, November, one ♀; Nodoo, August, nine ♂♂; Leanui, wet month, eight ♂♂, two ♀♀.

13. *Papilio helenus* Linn.

Syst. Nat., x, p. 459 (1758).

Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 123 (1887); Moore, *Proc. Zool. Soc.*, p. 696 (1878); Crowley, *Proc. Zool. Soc.*, p. 509 (1900).

Interior, March, two ♂♂, April, four ♂♂, May, seven ♂♂, June, two ♂♂, August, three ♂♂, September, one ♂, October, one ♂, one ♀, no date, four ♂♂, one ♀, September, one ♂; Five Finger Mountains, May, one ♂, June, five ♂♂; Sui Mahn Doorg, southwestern slope June, one ♂; Nodoo, August, three ♂♂.

♂ aberration.

Hind wing patches smaller with a distally eulegic edge. On the hind wing below, the upper anal spot and the two lunules in cellule 2 are merged in a large red patch filling the distal two thirds of 2 and forming a patch on inner margin; the distal edge of the shorter patch is straight and of the longer patch curved. Taken in August.

*14. *Papilio hipponous bowringi* Prout.

P. fuscus bowringi Prout, *Entomologist*, lii, p. 129 (1919) (Hainan).

Yulinkang, June, one ♂.

Allied to *pitmani* Elw., from Tenasserim and Siam.

15. *Papilio polytes* Linn.

P. polytes, *Syst. Nat.*, x, p. 460 (1758); Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 123 (1887).

♂ f. *vern. borealis* Feld.

Wien. Ent. Mon., vi, p. 22 (1861).

Interior, March, one ♂ (red anal spot on hind wing), April, one ♂, May, two ♂ ♂, December, one ♂. Five Finger Mountains, Nanfong, March, one ♂ (red anal spot on hind wing).

♂, f. *aest. pammon* Linn.

Pap. pammon, *Syst. Nat.*, x, p. 460 (1758); Moore, *Proc. Zool. Soc.*, p. 696 (1878).

Interior, March, four ♂ ♂, April, two ♂ ♂, May, nine ♂ ♂, June, one ♂, July, one ♂, September, twenty ♂ ♂, October, one ♂, December, four ♂ ♂; Nodda, August, fourteen ♂ ♂; Five Finger Mountains: Nanfong, March, five ♂ ♂; Five Finger Mountains, June, two ♂ ♂; Leanui, wet month, five ♂ ♂; Hoihow, March to December, three ♂ ♂, November, one ♂, August, three ♂ ♂.

Extreme form with very narrow band and no submarginal spots on hind wing below. Interior, September, three ♂ ♂; Nodda, August, one ♂.

♂ aberration *astreans* Jord.

Seitz' "Macrolepidoptera," ix, p. 61 (1910) (Southern India).

Hoihow, June, one ♂.

♀, f. *mandane* Roths.

Nov. Zool., ii, p. 348 (1895).

f. *vern*.

Interior, August, one ♀, September, three ♀ ♀, November, one ♀; December, one ♀; Leanui, wet month, one ♀; Nodda, August, five ♀ ♀; Five Finger Mountains: Nanfong, March, one ♀; Hoihow, March, one ♀.

f. *aestiv*.

Interior, no date, one ♀, May, five ♀ ♀, December, two ♀ ♀; Nodda, August, two ♀ ♀.

♀, f. *stichius* Hbn.

"Samml. Ex. Schmett.," i, t. 112 (1806-1816).

Interior, April, one ♀, August, one ♀, September, one ♀; Nodda, August, two ♀ ♀; Five Finger Mountains: Nanfong, March, one ♀; Hoihow, June, one ♀.

. Two out of the seven specimens are larger and have strongly developed red patches on the hind wing.

16. *Papilio memnon agenor* Linn.

Syst. Nat., x, p. 460 (1758).

Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 122 (1887) (Hainan).

P. esperi Holl. (nec Butl.), l.c., p. 122 (1887) (Hainan); Crowley, *Proc. Zool. Soc.*, p. 509 (1900):

Interior, March, two ♂♂, April, one ♂, May, five ♂♂, August, one ♂, September, nine ♂♂, October, two ♂♂, no date, two ♂♂.

♀, white stripes on hind wing reduced distally. May to September, one; no date, one.

White stripes on hind wing extended to submarginal black spots, August, one.

Leanui, wet month, two ♂♂; Nodoo, August, fourteen ♂♂; Five Finger Mountains, 5,500 feet, May, two ♂♂, 2,500 feet, May, one ♂; Seven Finger Mountains, September, one ♂.

♀ f. *distantianus* Roths.

Nov. Zool., ii, p. 320 (1895).

P. achates Holl. (nec Cram.), *Trans. Amer. Ent. Soc.*, xiv, p. 122 (1887) (Hainan).

P. achates Moore (nec Cram.), *Proc. Zool. Soc.*, p. 697 (1878).

Interior, April to October, one; May, two; September, six; no date, four.

Ab. with white marginal spots on hind wing one, no date.

Ab. with red marginal spots on hind wing, June, one; Nodoo, August, one.

Ab. with marginal red spots on hind wing, August, one.

17. *Papilio protenor euprotenor* Fruh.

Ent. Zeit. Stutt., p. 46 (1908).

P. protenor Crowley (nec Cram.), *Proc. Zool. Soc.*, p. 509 (1900).

Interior, April, three ♂♂, one ♀, May, ten ♂♂, July, eight ♂♂, August, four ♂♂, September, twenty-four ♂♂, three ♀♀, no date seven ♂♂, one ♀; Five Finger Mountains: Sui Mahn Doorg, S. Slope, June, two ♀♀, two ♂♂.

*18. *Papilio rhetenor irene* J. and T.

Joicey and Talbot, *BULL. HILL MUS.*, i, p. 168, pl. xx, figs. 3, 4 (1921) (Hainan).

Interior, March, one ♂, April, six ♂♂, June, one ♂, August, one ♀, September, two ♂♂; Five Finger Mountains: Namfung, March, one ♂; Five Finger Mountains: June, one ♀.

19. *Papilio dialis cataleucas* Roths.

Nov. Zool., xv, p. 173 (1908) (Hainan), ♂.

Joicey and Talbot, *BULL. HILL MUS.*, i, p. 168 (1921), ♀.

P. doddsi Crowley (nec Janet), *Proc. Zool. Soc.*, p. 510 (1900).

Interior, July, two ♂♂. August, three ♂♂, one ♀, September,

five ♂♂, two ♀♀, no date, one ♂ (tail reduced to a lobe); Five Finger Mountains, May 27, 1920, one ♂; Seven Finger Mountains, September, one ♂.

20. *Papilio paris tissaphernes* Fruh.

Ent. Zeit. Stutt., p. 171 (1909).

P. paris Holland (nec Linn.), *Trans. Amer. Ent. Soc.*, xiv, p. 123 (1887).

P. paris Crowley (nec Linn.), *Proc. Zool. Soc.*, p. 510 (1900).

Interior, March, one ♂, March to October, four ♂♂, one ♀, April, five ♂♂, April to October, one ♂, May, five ♂♂, one ♀, June, one ♂, one ♀, July, seven ♂♂, August, five ♂♂, one ♀, September, eighteen ♂♂, four ♀♀, November, two ♀♀, no date, four ♂♂, one ♀; Nodda, August, five ♂♂, three ♀♀; Five Finger Mountains: Sui Mahn Doorg, south-western slopes, June, two ♂♂; Nanfong, March, one ♂; Five Finger Mountains, June, three ♂♂; Leanui, wet month, three ♂♂.

21. *Papilio agetes* Westw.

"Arc. Ent.," ii, p. 93, t. 55, figs. 1, 2 (1843).

Crowley, *Proc. Zool. Soc.*, p. 510 (1900).

We did not receive this species.

22. *Papilio nomius swinhoei* Moore.

P. swinhoei Moore, *Proc. Zool. Soc.*, p. 697 (1878) (Hainan).

P. nomius Holland (nec Esp.), *Trans. Amer. Ent. Soc.*, xiv, p. 123 (1887).

Yulinkang, May to August, five ♂♂; Five Finger Mountains: Nanfong, March, two ♂♂, no date, one ♀.

23. *Papilio antiphates pompilius* Fbr.

"Mant. Ins.," ii, p. 8 (1787).

P. antiphates Holland (nec Cram.), *Trans. Amer. Ent. Soc.*, xiv, p. 123 (1887).

P. continentalis Crowley (nec Fieber), *Proc. Zool. Soc.*, p. 510 (1900).

Interior, March, six ♂♂, April to October, one ♂, May, seven ♂♂, June, one ♂, July, four ♂♂, two ♀♀, August, one ♂, one ♀, September, two ♂♂: Five Finger Mountains: Nanfong, March, one ♀.

24. *Papilio payeni hegylus* Jord.

Seitz' "Macrolep.," ix, p. 91 (1909) (Hainan).

We did not receive this form.

25. *Papilio sarpedon* Linn.

Syst. Nat., x, p. 461 (1758); Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 122 (1887) (Hainan); Crowley, *Proc. Zool. Soc.*, p. 510 (1900).

Interior, March, one ♂, April, two ♂♂, May, three ♂♂, June, one ♂, August, two ♂♂, September, two ♂♂, October, one ♂, December, one ♂, no date, two ♂♂; Nodoo, August, three ♂♂, two ♀♀; Five Finger Mountains, June, one ♂; Leanui, wet month, two ♂♂; Hoihow, June, one ♂. March to October, one ♂, no date, one ♂.

26. *Papilio doson axion* Feld.

P. axion Feld., *Verh. Zool. bot. Ges.*, xiv, p. 305 (1864).

P. axion Moore, *Proc. Zool. Soc.*, p. 697 (1878).

P. axion Crowley, *Proc. Zool. Soc.*, p. 510 (1900).

P. acheron, Crowley, l.c.

Yulinkang, May, one ♂, one ♀; Interior, no date, one ♂, March, two ♂♂, April, six ♂♂, April to October, one ♂, April to December, one ♀, May, nineteen ♂♂, July, one ♂, August, one ♂, September, five ♂♂, one ♀, October, two ♂♂, December, one ♂; Five Finger Mountains, Hoplohr District, April, one ♂.

27. *Papilio eurypylus cheronus* Fruh.

Berl. Ent. Zeit., p. 204 (1902).

P. telephus Holl. (nec Feld.), *Trans. Amer. Ent. Soc.*, xiv, p. 122 (1887).

Interior, January one ♂, March, two ♂♂, May, fifteen ♂♂, July, two ♂♂, one ♀, September, two ♂♂.

28. *Papilio bathycles chiron* Wall.

Trans. Ent. Soc. Lond., xxv, p. 66 (1865).

P. bathycles Crowley (nec Zink), *Proc. Zool. Soc.*, p. 510 (1900).

Interior, May, six ♂♂, July, three ♂♂, August, one ♂, September, three ♂♂.

29. *Papilio agamemnon* Linn.

Syst. Nat., x, p. 462 (1758).

Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 122 (1887) (Hainan).

Interior, July, one ♂, two ♀♀, September, four ♂♂, one ♀, October, one ♂, no date, two ♂♂; Yulinkang, May, one ♀, August, one ♂; Nodoa, August, one ♂; Hoihow, June, one ♂, one ♀, March to December, one ♀.

All the ♂♂ are short-tailed (f. *aegisthus* L.), and the ♀♀ are long-tailed.

30. *Papilio macareus mitis* Jord.

Seitz' "Macrolep.," ix, p. 104 (1909) (Hainan).

P. striatus Crowley (nec Lathy), *Proc. Zool. Soc.*, p. 510 (1900).

Five Finger Mountains, Upper Huymo Doorg, Huplohr District April, two ♂♂, May, one ♂.

31. *Papilio xenocles xenocles* Fruh.

Soc. Ent., p. 73 (1902).

P. xenocles Crowley (nec Doubl.), *Proc. Zool. Soc.*, p. 510 (1900).

Interior, March, twelve ♂♂, May, two ♂♂, no date, two ♂♂. (In Hope Mus., August, one ♂.)

32. *Papilio megarus similis* Lathy.

Entomologist, p. 149 (1899).

P. megarus Holland (nec Westw.), *Trans. Amer. Ent. Soc.*, xiv, p. 122 (1887).

P. megarus Moore (nec Westw.), *Proc. Zool. Soc.*, p. 697 (1878).

Interior, March, one ♂. This does not differ from Siam specimens.

*33. *Leptocircus curius walkeri* Moore.

"Lep. Ind.," v, p. 137 (1902) (Hong-Kong).

Interior, July, four ♂♂, September, four ♂♂, no date, one ♂, May, three ♂♂, June, one ♀, August, two ♂♂; Five Finger Mountains, June, one ♂.

34. *Leptocircus meges virescens* Butl.

Cat. Fabr., p. 259 (1869).

Interior, September, one ♂, October, one ♂, March, three ♀♀, May, one ♀; Five Finger Mountains, May, four ♀♀, June, three ♀♀.

PIERIDAE.

35. *Leptosia xiphia* Fbr.

Pap. xiphia, "Sp. Ins.," ii, p. 43 (1781).

Nychitona xiphia Moore, *Proc. Zool. Soc.*, p. 699 (1878) (Hainan).

Pontia xiphia Holl., *Trans. Amer. Ent. Soc.*, xiv, p. 121 (1887).

Interior, April, six ♂♂, June, one ♂, August, one ♂, September, two ♂♂, two ♀♀, November, one ♂.

36. ? *Delias hyparete ciris* Fruh.

Seitz' "Macrolep.," ix, p. 125 (1910) (Siam, Cochin China, Tonkin, Tenasserim).

D. hierte Holland (nec Hubn.), *Trans. Amer. Ent. Soc.*, xiv, p. 121 (1887).

We did not receive this species.

37. *Delias aglaia porsenna* Cram.

Pap. porsenna, "Pap. Exot.," i, p. 68, t. xliii, D.E. (1775) ("Batavia" err.).

Thyca pasithoe Moore (nec Linn.), *Proc. Zool. Soc.*, p. 701 (1878).

Interior, April, one ♀, May, two ♀♀, June, one ♀, August, one ♂, one ♀, September, one ♂, no date, four ♂♂, one ♀; Five Finger Mountains, Nanfong, April, one ♂.

38. *Prioneris thestylis* Doubl.

Gray, *Zool. Miscell.*, p. 76 (1842).

P. thestylis hainanensis Fruhst., Seitz' "Macrolep.," ix, p. 136 (1910) (Hainan).

P. thestylis Crowley, *Proc. Zool. Soc.*, p. 508 (1900).

We can detect no constant difference between our series and Indian specimens. The wet form is typical and there are specimens transitional to *watsoni* Hew.

f. typ.

Five Finger Mountains, April, one ♂. May, three ♂♂.

f. intermediate.

Interior, May, one ♂, July, one ♂, September, two ♂♂; Leanui, wet month, two ♂♂.

f. *watsoni* Hew.

Trans. Ent. Soc. Lond., p. 100 (1868).

P. watsoni Crowley, *Proc. Zool. Soc.*, p. 508 (1900).

We did not receive this form.

39. *Prioneris clemante euclemante* Fruh.

Soc. Ent., p. 35 (1903) (Hainan).

P. clemante Crowley (nec Doubl.), *Proc. Zool. Soc.*, p. 508 (1900).

Interior, March, six ♂♂, April to September, one ♂, April to October, one ♂, May, three ♂♂, June, two ♂♂, July, eight ♂♂, one ♀, September, two ♂♂, no date, nine ♂♂; Hoihow, no date, one ♂.

In most specimens the yellow area on the hind wing below is reduced and does not reach the submarginal line.

40. *Pieris canidia* Sparr.

Pap. canidia Sparr. *Amoen. Acad.*, vii, p. 504 (1769).

Synchlœ canidia Moore, *Proc. Zool. Soc.*, p. 701 (1878).

P. canidia Holl., *Trans. Amer. Ent. Soc.*, xiv, p. 121 (1887).

Interior, March, two ♂♂, April, one ♀, May, six ♂♂, three ♀♀, June, two ♂♂, August, one ♂, one ♀, December, three ♂♂, no date, three ♂♂; Nodoa, March, one ♀.

*41. *Pieris naganum* Moore.

Journ. As. Soc. Bengal, p. 45 (1884).

Five Finger Mountains, Fansa, south-western slope, 5,000 feet, June, two ♂♂.

42. *Huphina nerissa* Fbr.

Pap. nerissa, *Syst. Ent.*, p. 471 (1775).

Appias amasene Holl., *Trans. Amer. Ent. Soc.*, xiv, p. 121 (1887).

A. amasene Moore, *Proc. Zool. Soc.*, p. 700 (1878); Crowley, *Proc. Zool. Soc.*, p. 509 (1900).

Pieris phryne Holl. (nec Fbr.), *Trans. Amer. Ent. Soc.*, xiv, p. 121 (1887).

f. *vern. coronis* Cram.

Pap. coronis, "Pap. Exot.," i (4), p. 69, t. xlv, B.C. (1775) (Coromandel).

Interior, March, one ♀, May, three ♂♂, August, one ♂, September, three ♂♂.

November, one ♂, one ♀, July, two ♂♂; Five Finger Mountains: Hoplohr District, April, one ♂; Five Finger Mountains, May, one ♂; Hoihow, April, one ♂, June, one ♂, one ♀, November, one ♂, one ♀, no date, two ♂♂.

f. aest. *nerissa* Fbr.

Appias copia Moore, *Proc. Zool. Soc.*, p. 700 (1878).

Ho Ching Sang, one ♂ ; Hoihow, January, one ♂ , December, two ♂ ♂ , two ♀ ♀ . The ♀ ♀ are yellowish, one strongly so.

43. *Huphina nadina* Luc., f. *nama* Moore.

Cat. Lep. E.I.C., i, p. 76 (1857) (Northern India)

Huphina nadina Crowley, *Proc. Zool. Soc.*, p. 509 (1900).

H. nama hainanensis Fruhst., *Ent. Rdsch.*, xxx, p. 92 (1913) (Hainan).

Interior, March, one ♀ , April, one ♀ , May, three ♂ ♂ , one ♀ , June, one ♂ , July, one ♂ , August, one ♂ , September, two ♂ ♂ . December, three ♂ ♂ ; Five Finger Mountains, May, four ♂ ♂ .

Both the wet form, *nadina*, and the intermediate form, *nama*, were obtained in the same months. We cannot differentiate either of these from Indian examples, so the name *hainanensis* must therefore sink.

44. *Appias libythea* Fbr.

Pap. libythea, *Syst. Ent.*, p. 471 (1775).

f. vern. *libythea* Fbr.

♀ = f. *zelmira* Stoll.

P. zelmira Stoll. in Cram., "Pap. Exot.," iv, p. 64, t. 320, C. D. (1780) (Coromandel).

A. zelmira Moore, *Proc. Zool. Soc.*, p. 700 (1878).

Interior, April, one ♂ , two ♀ ♀ , June, one ♀ , September, one ♀ , no date, two ♂ ♂ ; Yulinkang, April, one ♀ ; Hoihow, June, two ♂ ♂ , one ♀ , August, two ♂ ♂ , two ♀ ♀ , October, three ♂ ♂ , two ♀ ♀ , December, one ♂ .

f. aest. *irvinii* Swinh.

Ann. Mag. Nat. Hist. (6) 5, p. 359 (1890) (Mandalay).

Hoihow, January, two ♂ ♂ , one ♀ , December, one ♂ , one ♀ ; Yulinkang, May, one ♀ .

45. *Appias lyncida inornata* Moore.

Proc. Zool. Soc., p. 700 (1878) (Hainan).

A. hippoides Moore, *Trans. Ent. Soc. Lond.*, p. 312 (1881) (North-East Bengal); Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 121 (1887).

A. hippo Crowley (nec Cram.), *Proc. Zool. Soc.*, p. 508 (1900).

53. *Catopsilia pyranthe* Linn.

Pap. pyranthe, *Syst. Nat.* x, p. 469 (1758).

Crowley, *Proc. Zool. Soc.*, p. 509 (1900).

f. *vern. chryseis* Drury.

Pap. chryseis, "III. Nat. Hist.," i, p. 23, pl. xii, figs. 3, 4 (1770).

Interior, May, one ♂, three ♀♀, September, three ♂♂, seven ♀♀, no date, four ♂♂, two ♀♀, one ♀ with base of fore wing blackish-brown to half the cell. Nodda, August, one ♀; Five Finger Mountains, June, one ♂; Hoihow, April to December, one ♀, April, three ♂♂, August, one ♂.

f. *aest. gnoma* Fbr.

Pap. gnoma, *Syst. Ent.*, p. 828 (1775).

C. gnoma Holl., *Trans. Amer. Ent. Soc.*, xiv, p. 122 (1887).

C. gnoma Moore, *Proc. Zool. Soc.*, p. 699 (1878).

Interior, January, one ♂, May, one ♀, November, one ♂; Hoihow, November, one ♂.

*54. *Catopsilia florella* Fbr.

Pap. florella, *Syst. Ent.*, p. 479 (1775).

Interior, November, one ♂, no date, one ♂; Hoihow, January one ♂, one ♀, November, one ♂, two ♀♀, December, two ♂♂.

55. *Catopsilia crocale* Cram.

f. *alcmeone* Cram.

"*Pap. Exot.*," ii, p. 71, pl. cxli, fig. E (1777) (Coromandel).

Hoihow, October, one ♂, November, three ♂♂, December, one ♂; Five Finger Mountains, June one ♂.

♀ f. *jugurtha* Cram.

"*Pap. Exot.*," ii, p. 138, pl. clxxxvii, figs. E, F (1777) (Coromandel).

Interior, June, one ♀, December one ♀; Hoihow, April, one ♀, November one ♀, December, one ♀.

♀ f. *crocale* Cram.

"*Pap. Exot.*," i, p. 87, pl. lv, figs. C, D (1775) (Ind. Orient.).

Hoihow, July, one ♀.

*56. *Catopsilia pomona* Fbr.

Pap. pomona, *Syst. Ent.*, p. 479 (1775).

We follow Fruhstorfer in treating this as a separate species, as further confirmation by breeding is desirable before it can be said that *pomona* and *crocale* are dimorphic forms of the same.

Interior, November, one ♀, December, one ♀; Nodda, August, one ♂; Hoihow, December, three ♂♂, four ♀♀.

TERIAS.

We have received three species of *Terias* from Hainan, *libythea*, *hecabe*, and *blanda*. The form described by Moore as *hainana* is a race of *laeta*, and the other forms described by Moore as *subdecorata*, *arcuata*, and *attenuata* appear to belong to *hecabe*. We cannot identify any *blanda* form as previously received from the island.

It is often difficult to separate some forms of *hecabe* from *blanda*, but *blanda* may be recognized, as stated by Fruhstorfer in Seitz, by the presence of "three streaks on the undersurface of the fore wing." This really means three marks in the cell, the third mark being a dot at the base. This dot is often obliterated or is so vestigial that it cannot be seen with certainty. In such cases we have found that a character on the hind wing below is usually constant, viz., a series of intranervular marginal dots. Sometimes these are absent but in this case the basal cell-dot on the fore wing is probably well marked, at least in the specimens we have examined. We must dissent from the description of the genitalia given by Fruhstorfer in Seitz, ix, p. 168.

Although some form of *blanda* may show the valve armed with "a corona of four sharp teeth," our own dissections show a distinct bifurcation at the distal edge, one lobe being much larger than the other and irregularly notched. There is a finger-like process on either side. In *hecabe* there is only a short pointed process at the distal edge, with two finger-like processes on one side and two short and sharper processes on the other.

57. *Terias libythea* Fbr.

Pap. libythea, *Ent. Syst. Suppl.*, p. 427 (1798).

f. vern. *libythea*.

T. drona Holl. (nec Horsf.), *Trans. Amer. Ent. Soc.*, xiv, p. 121 (1887).

Five Finger Mountains, May, one ♂; Interior, no date, one ♀, September, one ♀.

These specimens are not different from Chinese ones.

f. aest. *rubella* Wall.

Trans. Ent. Soc. Lond., p. 323 (1867) (Calcutta).

T. hainana Moore, *Proc. Zool. Soc.*, p. 700 (1878) (Hainan).

As Moore says his species is allied to *drona* Horsf., it should not be associated with *laeta* as is done in Seitz.

58. *Terias laeta* Bdv.

Spec. "Gen. Lep.," i, p. 674 (1836).

Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 121 (1887).

We did not receive this species.

59. *Terias hecabe* Linn.

Pap. hecabe, *Syst. Nat.*, x, p. 470 (1758).

T. subdecorata Moore, *Proc. Zool. Soc.*, p. 699 (1878) (Hainan).

T. attenuata Moore, l.c., p. 700 (1878) (Hainan).

T. arcuata Moore, l.c., p. 700 (1878) (Hainan).

T. hecabe Holl., *Trans. Amer. Ent. Soc.*, xiv, p. 121 (1887).

? *T. suava* Crowley (nec Boisd.), *Proc. Zool. Soc.*, p. 508 (1900).

We cannot distinguish any constant difference between our large series of Hainan examples and Indian specimens. There are many intermediates between the very narrow bordered *attenuata* and the more typical *hecabe*. Some females cannot be distinguished from the figure of *aesiope* given by Ménétries and there are males to match them. This was the form designated by Moore as *subdecorata*.

f. vern. *hecabe* L.

T. subdecorata Moore, l.c. ♂.

T. arcuata Moore, l.c.

T. suava Crowley (nec Boisd.), l.c.

Interior, April, two ♂♂, two ♀♀, May, eighteen ♂♂, seven ♀♀, July, forty-six ♂♂, sixteen ♀♀, August, six ♂♂, five ♀♀, September, forty-nine ♂♂, twenty-five ♀♀, November, one ♂, one ♀, December, five ♂♂, no date, one ♂; Nodda, August, one ♂; Hoihow, August, one ♀.

Included in the above are three specimens without any marks whatever on the underside—December, one ♂, September, one ♂, one ♀.

The following specimens show a narrow black and more evenly rounded border on the fore wing (= *arcuata*). Interior, May, two ♂♂, July, three ♂♂, September, four ♂♂, October, one ♂.

f. aestiv. *aesiope* Mén.

Cat. Coll. Ent. Acad. Sc. Petr. Lep., i, p. 85, t. ii, fig. 3 (1855) ("Haiti," err.).

T. aesiopae Moore, *Proc. Zool. Soc.*, p. 699 (1878).

T. subdecorata Moore, l.c., ♀.

T. attenuata Moore, l.c.

T. aesiopae Crowley, *Proc. Zool. Soc.*, p. 508 (1900).

We take this opportunity to point out that in Seitz' "Macrolepidoptera" Röber has included this form in the Fauna Americana, and Fruhstorfer has omitted it in the Indian fauna.

Interior, January, one ♂, April, two ♀ ♀, May, five ♂ ♂, six ♀ ♀, July, one ♀, August, two ♀ ♀, September, one ♂, three ♀ ♀, November, one ♀, December, four ♂ ♂, two ♀ ♀; Hoihow, no date, one ♀, December, one ♂.

*60. *Terias blanda hobsoni* Butl.

Proc. Zool. Soc., p. 668 (1880) (Formosa).

This form possesses the characteristics of *blanda*, and the Hainan specimens are so close to it that we hesitate to separate them, especially in view of the individual variation which exists.

The form described by Fruhstorfer as *acandra* (Seitz, ix, p. 169, 1910, Hong-Kong) is a *hecabe* form based on a single female specimen of the dry season, and of which we have examined the type. Fruhstorfer has also described from Formosa what he calls *blanda arsakia* f. *aphaia*. This is a small and narrow-margined *hecabe*, but the name may be retained to represent the *hecabe* form in Formosa, since we treat *hobsoni* as a *blanda* form. We must point out, however, that Butler, l.c. p. 668, described a form from Formosa as *unduligera*, and this may belong to *hecabe*.

Interior, May, six ♂ ♂, July, five ♂ ♂, September, ten ♂ ♂, one ♀, December, one ♂, one ♀; Five Finger Mountains, June, one ♂. The black border of the fore wing of this specimen is shaped as in a pronounced *hecabe*.

The specimens of the so-called dry form with the reddish markings are labelled May, September, and December.

61. *Gandaca harina hainana* Fruh.

Seitz' "Macrolep.," ix, p. 173 (1910) (Hainan).

Terias harina Crowley (nec Horsf.), *Proc. Zool. Soc.*, p. 508 (1900).

Interior, April, three ♂ ♂, May, one ♂, one ♀, September, one ♂, December, one ♀, no date, one ♀.

62. *Hebomoia glaucippe* Linn.

Pap. glaucippe, *Syst. Nat.*, x, p. 469 (1758).

Crowley, *Proc. Zool. Soc.*, p. 508 (1900).

Interior, March, three ♂♂, April, three ♂♂, one ♀, May, two ♂♂, June, two ♂♂, July, three ♂♂, August, one ♂, September, four ♂♂; Nodda, August, one ♂, two ♀♀; Leanui, wet month, one ♂, one ♀; Hoihow, no date, seven ♂♂, two ♀♀.

63. *Pareronia valeria hippia* Fbr.

Pap. hippia, *Mant.*, ii, p. 55 (1787).

Nepheronia valeria Holl. (nec Cram.), *Trans. Amer. Ent. Soc.*, xiv p. 122 (1887).

Interior, March, one ♂, April, one ♂, May, one ♂, one ♀, June, one ♀, July, two ♂♂, December, one ♀, no date, one ♂, one ♀; Leanui, wet month, one ♀; Hoihow, March-September, one ♂, May, one ♂, June, two ♂♂, two ♀♀, November, one ♂, one ♀.

DANAIDAE.

64. *Limnas chrysippus* L.

Pap. chrysippus, *Syst. Nat.*, x, p. 471 (1758).

Moore, *Proc. Zool. Soc.*, p. 695 (1878).

Interior, no date, one ♂; Hoihow, December, two ♂♂.

65. *Danais plexippus* Linn.

Pap. plexippus, *Syst. Nat.*, x, p. 471 (1758).

Moore, *Proc. Zool. Soc.*, p. 695 (1878).

Danais genutia Holl., *Trans. Amer. Ent. Soc.*, xiv, p. 111 (1887).

Salatura genutia Crowley, *Proc. Zool. Soc.*, p. 505 (1900).

Interior, April-December, one ♂, May, one ♀, September, three ♂♂, one ♀, no date, two ♂♂; Nodda, August, one ♂, two ♀♀; Hoihow, June, one ♂, no date, two ♂♂.

*66. *Danais (Tirumala) melissa septentrionis* Butl.

Ent. Mo. Mag., xi, p. 163 (1874).

Interior, September, two ♂♂, two ♀♀, no date, one ♂; Nodda, August, one ♀.

67. *Danais (Tirumala) gautama* Moore.

Ann. Mag. Nat. Hist. (4), xx, p. 43 (1877) (Burmah).

Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 111 (1887).

Interior, no date, one ♂, one ♀.

68. *Danaida (Tirumala) limniace* Cram.

"Pap. Ex.," i, p. 92, t. 59, D.E. (1775) (China).

D. limniace norinia Fruhstorfer, Seitz' "Macrolep.," ix, p. 274 (1911) (Hainan).

D. limniace Moore, *Proc. Zool. Soc.*, p. 695 (1878); Holland, *Trans. Amer. Ent. Soc.*, xiv (1887); Crowley, *Proc. Zool. Soc.*, p. 505 (1900).

Interior, May, one ♂, September, three ♂♂, four ♀♀, December, one ♂, no date, two ♂♂, one ♀; Nodda, August, three ♂♂; Yulinkang, no date, one ♂; Five Finger Mountains, Nanfong, March, two ♀♀; Hoihow, June, two ♂♂, one ♀; August, one ♂, one ♀, November, two ♂♂, October, one ♂, no date, two ♂♂, one ♀.

This series is no different from an Indian series, neither in size of specimens nor in size of spots.

69. *Danaida (Parantica) aglea grammica* Bdv.

"Sp. Gen.," i, t. 11, fig. 10 (1836).

D. aglea phormis Fruhstorfer, *Ent. Zeit. Stutt.*, p. 117 (1909).

Seitz' "Macrolep.," ix, p. 208 (as "phormion") (1910); loc. cit. (part), p. 274 (1911) (Tonkin, Annam, Siam, Hainan).

D. aglea Moore (nec Cram.), *Proc. Zool. Soc.*, p. 695 (1878); Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 111 (1887).

Interior, January-December, one ♂, March, one ♂, May, one ♂, three ♀♀, June, two ♂♂, July, one ♀, August, one ♂, one ♀, September, one ♀, no date, three ♂♂; Yulinkang, no date, one ♂; Five Finger Mountains, Fansa, south-west slopes, 5,000 feet, June, one ♀; Hoihow, November, one ♀.

We are unable to separate the specimens of this series from Indian ones, and no difference is shown by two examples from Annam in the Joicey collection.

70. *Danaida (chittira) melaneus plataniston* Fruh.

Seitz' "Macrolep.," ix, p. 210 (1910) (Sikkim).

Caduga swinhoei Crowley (nec Moore), *Proc. Zool. Soc.*, p. 505 (1900).

Interior, December, one ♂; Five Finger Mountains, Sui Mahu Doorg, south slopes, June, one ♂; Five Finger Mountains, May, one ♂.

*71. *Danaida (chittira) sita tytia* Gray.

"Lep. Ins. Nepal," p. 9, pl. ix, fig. 2 (1833-1846).

Five Finger Mountains, June, one ♂.

*72. *Danaida (Radenia) similis* Linn.

Pap. similis, *Syst. Nat.*, x, p. 479 (1758).

Interior, March, two ♂♂, one ♀, April, one ♂, May four ♂♂, two ♀♀, August, four ♂♂, one ♀, September, one ♂, one ♀, April-October, two ♂♂, December, one ♂, no date, four ♂♂, one ♀; Leanui, wet month, one ♂, one ♀; Hoihow, May-October, one ♂.

73. *Euploea (Crastia) modesta deriopes* Fruh.

Seitz' "Macrolep.," ix, p. 275 (1911) (Hainan).

We did not receive this species.

74. *Euploea (Crastia) amymone* Godt. *hadrumaia* Fruh.

Seitz' "Macrolep.," ix, p. 276 (1911) (Hainan).

E. felderi Moore (nec Butl.), *Proc. Zool. Soc.*, p. 695 (1878); Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 113 (1887).

? *E. prunosa tersatica* Fruh., Seitz' "Macrolep.," ix, p. 276 (1911) (Hainan).

Interior, March, one ♂, one ♀, April, four ♂♂, May, three ♂♂, three ♀♀, June, one ♂, August, one ♂, September, three ♂♂, one ♀, no date, seven ♂♂, four ♀♀; Yulinkang, June, one ♂, one ♀, no date, three ♂♂, two ♀♀; Nodoa, August, five ♂♂; Leanui, wet month, one ♀; Five Finger Mountains, Nanfong, March, one ♂; Hoihow, May, one ♂, two ♀♀, June, one ♂, one ♀, August, six ♂♂, one ♀, August-October, one ♂, November, two ♂♂.

Specimens without submarginal spots on the hind wing above may be called *tersatica* Fruh. We fail to recognize two species in the series here recorded, and the forms with and without marginal and submarginal spots on the hind wing are connected by transitions. All the ♀♀ in our series have the submarginal dots of the fore wing more or less tinged with blue (cf. Fruhstorfer, loc. cit.).

One specimen is worthy of note. It is without any blue sheen on the fore wing, and shows a violet apical suffusion as in *godarti* but much less pronounced.

*75. *Euploea (Stictoploea) harrisi binotata* Btlr.

Stictoploea binotata Btlr., *Journ. Linn. Soc. Zool.*, xiv, p. 302 (1878), (Silhet).

E. harrisi binotata Fruh., Seitz' "Macrolep.," ix, pl. lxxxii, a (1910) (Sikkim, Assam).

Hoihow, September, one ♂; Interior, May, one ♂, September, two ♀ ♀.

76. *Euploea (Tropsichrois) mulciber* Cram.

"Pap. Ex.," ii, p. 45, pl. cxxvii, figs. C, D (1777) (China).

Tropsichrois linnaei Crowley (nec Moore), *Proc. Zool. Soc.*, p. 505 (1900).

Interior, May, four ♂ ♂, July to October, one ♂, August, two ♂ ♂, two ♀ ♀, September, one ♂, two ♀ ♀, November, two ♂ ♂, December, one ♂, no date, three ♂ ♂; Leanui, wet month, one ♀; Five Finger Mountains, May, one ♂, June, one ♂.

77. *Euploea (Salpinx) dehaani hainana* Holl.

Calliploea ledereri var. *hainana* Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 113 (1887) (Hainan).

E. dehaani minorata Fruhstorfer (nec Moore), Seitz' "Macrolep.," ix, p. 262 (1910).

E. musa Swinhoe, *Ann. Mag. Nat. Hist.* (3), p. 103 (1899) (Tonkin).

Interior, March, one ♂ one ♀, April, one ♂, May, six ♂ ♂, one ♀, August, one ♂, September, three ♂ ♂, November, one ♂, no date, four ♂ ♂; Yulinkang, May, one ♂, June, one ♂, no date, one ♀; Nodoo, August, one ♂; Five Finger Mountains, Upper Huymo Doorg, Hoplohr dist., April, one ♂; Hoihow, August, one ♀, September, one ♀.

Fruhstorfer in Seitz' "Macrolepidoptera" has confused *hainana* Holl. with *minorata* Moore and sinks the former. It is *negleyana* Holl, which must sink to *minorata*.

78. *Euploea (Salpinx) leucostictos minorata* Moore.

Salpinx minorata Moore, *Proc. Zool. Soc.*, p. 695 (1878) (Hainan).

Salpinx negleyana Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 112, pl. i, fig. 2 (1887) (Hainan).

E. leucostictos negleyana Fruh., Seitz' "Macrolep.," ix, p. 262 (1910).

Interior, May, one ♂ one ♀, July, one ♂, September, four ♂ ♂, no date, one ♀; Yulinkang, May, one ♂; Hoihow, May, one ♀, July, one ♀, August, one ♀, September, one ♂, no date, one ♂ one ♀.

f. *leucostictina* Fruh.

Seitz' "Macrolep.," ix, p. 277 (1911) (Hainan).

No specimens of this form were received.

79. *Euploea* (*Salpinx*) *midamus* L. *aegumurus* Fruh.

Seitz' "Macrolep.," ix, p. 277 (1911) (Hainan).

Interior, August, one ♀, September, one ♀ ; Hoihow, August, three ♂ ♂, three ♀ ♀, November, one ♀.

We retain Fruhstorfer's name in the absence of a larger series, but our specimens do not differ from typical ones.

ACRAEIDAE.


*80. *Pareba vesta* Fbr.

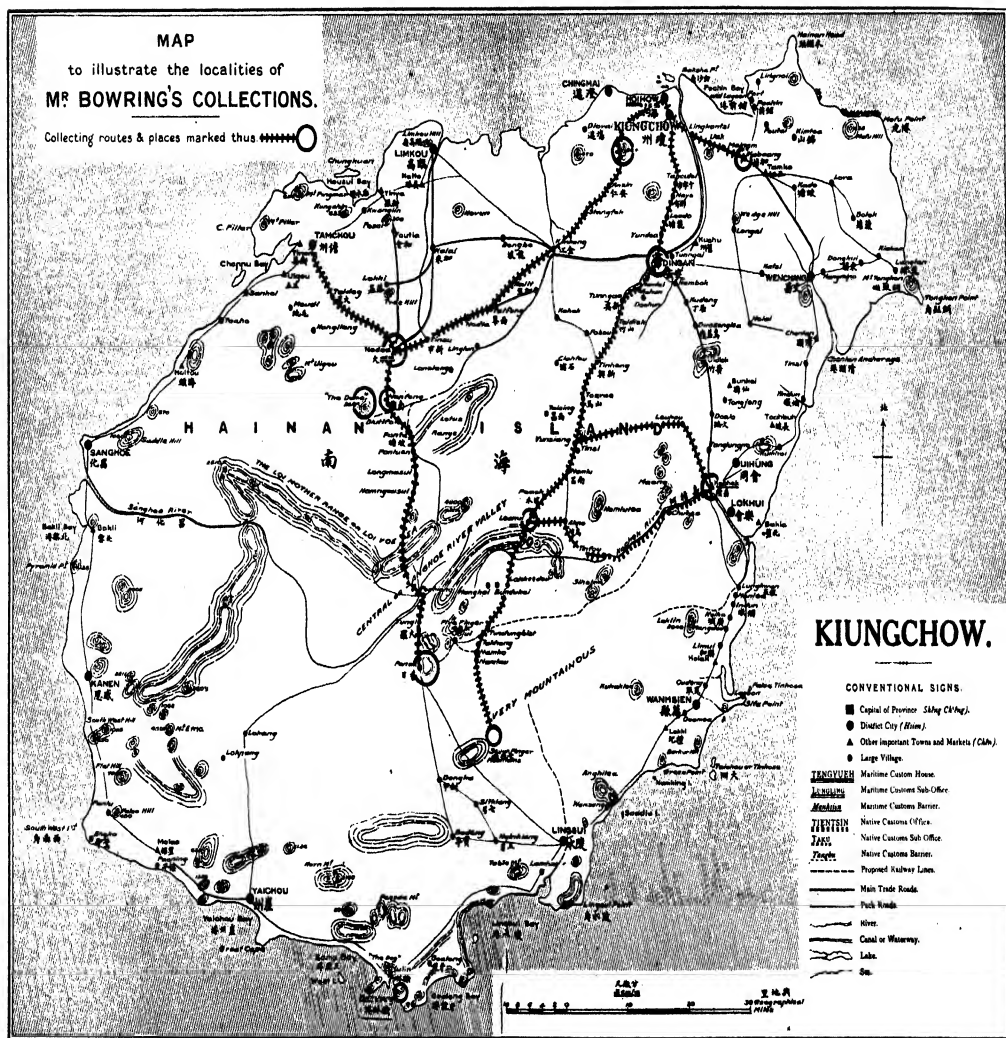
Pap. vesta, "Mant. Ins.," 2, p. 14 (1787).

Interior, October, one ♀, no date, one ♂, one ♀ ; Five Finger Mountains: Sui Mahn Doorg, south slope, June, one ♂ ; Five Finger Mountains: south-west slope, June, one ♂ ; Five Finger Mountains, May, one ♂.

(*To be continued.*)

MAP
to illustrate the localities of
MR BOWRING'S COLLECTIONS.

Collecting routes & places marked thus 



NEW FORMS OF AFRICAN LEPIDOPTERA.

BY J. J. JOICEY AND G. TALBOT.

THE forms here described, except where otherwise stated, were collected by T. A. Barns, F.R.G.S., &c., on his expedition to the Great Craterland and the Congo.

All the types are in the Hill Museum.

Thirty-nine forms are described in the present paper, and a considerable number still remain to be worked out. There are several new *Lasiocampidae*, and these will be included in a paper on this family which may have to be published elsewhere at a later date.

RHOPALOCERA.

ACRAEIDAE.

1. *Planema obliqua* Auriv. ♀.

♀. Resembles the ♂. The yellow band of fore wing and white band of hind wing broader.

In coll. Joicey from Cameroons: Bansa Mountains, north of Kumbo, 6,000 feet, September, one ♂, one ♀; between Bamenda and Kumbo, 4,000 feet, August, one ♂, one ♀; between Banyo and Gendern, 4,000 feet, September, one ♀.—Coll. G. L. Bates.

NYMPHALIDAE.

2. *Euptera sirene* Stgr. ♀.

The two specimens from which the following description is made have much in common with *semirufa* J. and T. from the Congo. We have received a ♂ of a *sirene* form from the same district as one of the *semirufa*, and it seems possible that these are sexes. If we are correct in this, it follows that the two ♀♀ under consideration are possibly *sirene*.

Upperside ground-colour black-brown with rufous markings and white spots. Fore wing with some white marks in the cell; a waved rufous subbasal line from origin of vein 3 to inner margin; a rufous

patch between vein 2 and inner margin, extended more distad than in *semirufa*, enclosing a spot of ground-colour, and in one specimen just reaching vein 3; a white discal spot in 2 and another in 3, smaller than in *semirufa*, in the type rounded, in the paratype the lower one much larger than the upper one; three white discal streaks in 4 to 6; two small subcostal dots or streaks in 6 and 8; a submarginal series of six white ovate marks, open proximally where there is a series of six black spots; a submarginal crenulate line, interrupted at the veins, and vestigial in the type. Hind wing with a narrow rufous subbasal band from the origin of veins 5 and 6 to the submedian; distal two-thirds rufous, the proximal edge of this area more extended in cellule 3, and not extended above vein 7; a postdiscal series of six black spots, the upper one placed in the black-brown costal area, these spots placed more proximal than in *semirufa*; a small white spot in 6 proximally of the black one; a large white costal spot placed about midway in cellule 7 and limited by vein 8; costal edge grey-white to the middle; outer edge from the rufous area very slightly crenulate, and nearer to it than to the margin is a fine rufous line which is vestigial in the type; inner margin fuscous.

Underside with paler ground-colour, markings darker brown than above in the type, but yellow-brown in the paratype. Fore wing with the usual cell-marks; a black-brown spot below the cell; a discal row of three white streaks in 4 to 6; a postdiscal series of six black spots, the posterior one the larger, all ringed with dark- or yellow-brown. Submarginal ovate marks and line as on upperside; the middle part of the submarginal line in 3 and 4 much thickened, and in the paratype with extended white scaling to the adjacent ovate marks. Hind wing with a white basal line which does not invade the praecostal area; white costal spot as on upperside but reaching costa in the type; a white discal band, slightly brownish in the type, from submedian to vein 7, the spot in 4 longer than the others; a faint-brown subbasal line crossing the cell as on upperside; a post-discal series of seven black spots placed in the dark-brown band; the band narrower than on upperside, its outer edge narrowly yellow- or whitish-brown; a submarginal whitish line which is placed about midway in the dark marginal border in the type, and in the paratype it is placed closer to the edge of the brown band. In the paratype the inner margin and discal area suffused with ochreous.

Length of fore wing: Type, 24 mm.; paratype, 28 mm.

Habitat.—Bitje, Cameroons, 2,000 feet, January-February, G. L. Bates, ♀ type; Camerqons, Schwab, one ♀ paratype.

3. *Euptera sirene* Stgr. subsp.

The male specimen described below may possibly belong to the female we have described as *semirufa* (BULL. HILL MUS., p. 60), but until further evidence is available we think it better not to give a name to this male.

Upperside. Fore wing markings much as in *sirene* (*Iris*, 4, t. 1, fig. 6). The median line is reddish brown instead of yellow, the discal line is broken and the marks smaller, the submarginal marks above vein 3 are represented by a white curved mark in 3 and an oval white ring in 4. Hind wing with a much smaller triangular pale yellow patch, comprising a stripe in 2, a spot in 3, and the vestige of a small spot in 4; this is edged proximally by a short black band only reaching vein 5, and prolonged on the inner side along the submedian interspace to the anal angle. The black margin is anteriorly narrower than in *sirene*, and the edge of the red-brown area is more evenly defined.

Underside much as in *sirene*. Fore wing with the distal black spots not clearly defined and scarcely darker than the ground colour. Hind wing with the lower distal area paler than the other part; the dark subbasal band curved round on vein 8, its outer edge not curved round vein 7. In other respects as in the figured *sirene*.

Habitat.—Kondolola district, Lindi Valley, Belgian Congo, May, 1921, T. A. Barns, one ♂.

4. *Euptera pluto* Ward, subsp. *neptunus*, subsp. nov.

♂. Differs from the typical Cameroons form in the narrower band on the fore wing, and the anteriorly broader band on the hind wing. Differs from the East African *kinuguana* Sm. in the absence of the three subcostal spots on the fore wing.

Upperside of fore wing with the patch on the inner margin narrower than in *pluto*, the spot above it separated by vein 2 and smaller than in *pluto*. Hind wing with the band of nearly even width from the costa to the cell, its inner edge clear cut.

Underside as in *pluto*.

Habitat.—Kondolola district, Lindi Valley, Belgian Congo, May, 1921, T. A. Barns, two ♂♂.

The type specimen has a narrower band on the fore wing than the paratype.

The females of *Euptera pluto* Ward, and *hirundo* Stgr.

The female of *pluto* is known, especially from specimens of the race

kinuguana Sm., from East Africa and Nyasaland. They all agree in possessing the three subcostal spots on the fore wing characteristic of the male. The lower one of the three spots is usually separated from the upper discal spot, but in one female from Nyasaland it is separated only by the vein, and in one other from Nyasaland, of the brown form, these spots are all joined. The latter specimen bears a strong resemblance to the female of *hirundo*, but there is a distinct difference. In *hirundo* the band of the fore wing is broader, less irregular on its inner edge than in *pluto*, its outer edge defined by a pale angulate line, whereas in *pluto* there is always a distinct row of oval marks enclosing black spots, similar but smaller spots without distinct rings being present in *hirundo*. On the hind wing the band is broader in *hirundo*, and posteriorly not sharply defined from the paler inner margin. On the underside of the fore wing in *hirundo* there is a grey-white subapical patch above the submarginal lunule in cellule 5. This patch is present in all the males of *hirundo* we have examined, and is absent in *pluto*.

Having definitely ascertained how the females of these two species may be distinguished, we have no hesitation in assigning to *pluto* the female described by Schultze as *hirundo* ("Arch. Naturg.," Abt. A, 112, p. 139, 1916) and figured by him in "Ergb. der Zweit. d. Zentr. Afr. Exp.," Bd. i, t. xxxii, fig. 6, 1920. This specimen is not very different from Nyasaland examples, but has a broader band, whilst the three subcostal spots on the fore wing are more linear in shape than in any eastern examples.

The typical female of *hirundo* from West Africa is at present unknown to us, and judging by the results of collecting, this appears to be the rarer species.

SATYRIDAE.

5. *Mycalesis aurivilli* Btl. *kivuensis* subsp. nov.

It is generally unwise to found a race on a single specimen, but considering the differences usually presented by the fauna of Kivu and that of East Africa, the probabilities are in favour of this being a race rather than an individual aberration.

♂. Upperside without the white subapical spot or band of the typical form. The white band on the hind wing is extended slightly distad, and is indicated above vein 6 and below vein 3 by some sparse scaling mixed with brown.

Underside of fore wing with the white band straighter and narrower,

and angled above vein 4. The ocellus is smaller and there is no distinct white spot above it. Hind wing with the band slightly narrower than in typical form. Fringes not distinctly paler between the veins, only a few whitish scales here and there.

Habitat.—Lake Kivu, north end, 5,000 feet, October, T. A. Barns, one ♂.

ERYCINIDAE.

6. *Abisara barnsi*, J. and T. ♂.

♀. BULL. HILL MUS. i, p. 77, pl. XIII, figs. 41, 42 (1921).

♂ figured in "Across the Great Craterland to the Congo," T. A. Barns, pl. lxxxii, fig. 4, 1923.

♂. Ground-colour darker than in the female. Upperside of fore wing with a discal triangular area of purplish-blue, its apex reaching upper angle of cell, its base reaching from near base to the end of post-discal line on inner margin. Postdiscal line purplish-blue from cellule 9 to the tornus, its upper part to vein 4 broad, curved at this part, and strongly narrowed to the tornus. A small subapical ocellus in 5, black with purplish-blue centre. Hind wing with discal purplish-blue band broader than in the female, also forming a stripe along cellule 2, with a thinner stripe along cellule 3, reaching the postdiscal short angulate line. A submarginal line as in the female but thicker. Two ocelli in 4 and 5 as in the female.

Underside marked as in the female. Fore wing ocellus larger; submarginal area to vein 2, but not reaching margin between this vein and submedian, fuscous. Hind wing discal band much broader than in the female. A distinct pale basal area between vein 8 and lower margin of cell, extending into the angle of vein 5 and of 6 and 7.

Length of fore wing: 24 mm.

Habitat.—Oso-Lowa watershed, Belgian Congo, August, 1921, two ♂♂ (N. At.); Upper Lowa Valley, September, 1921, one ♂; Upper Maiko Valley, 2,500 feet, August, one ♂; Upper Maiko, North-East Lubutu, 2,800 feet, August, one ♂. All collected by T. A. Barns.

LYCAENIDAE.

7. *Alaena aurantiaca* Btl. ♀.

♂ ♀ figured in Barns' "Across the Great Craterland to the Congo," pl. lxxxii, fig. 8, ♂, 11 ♀, 1923.

The female of this interesting species is remarkably large considering the size of the male, and appears to be the largest female in the group.

It presents a strong Acraeine appearance though without mimicking any particular species. Wings much more rounded than in the male.

Upperside with orange-red ground-colour. Fore wing with a black spot in middle of cell, and one on the discocellulars. A black marginal border broad at the apex and narrowing posteriorly; two small yellowish spots in the marginal black, one between veins 2 and 3 and one below vein 2. Hind wing with orange-red area and black marginal border as in the male. Base black from upper edge of cell to midway on the inner margin, and in the base of cellule 8. A black spot and discocellular spot as in the male, a small black spot below origin of vein 2, base of cellule 3 black. A thin yellowish marginal line interrupted at the veins.

Underside of fore wing as in the male, excepting that there are only two black discal spots as on the upperside. Hind wing as in the male.

Length of fore wing: 21 mm.

Habitat.—Belgian Congo: East Luvua Valley, escarpment five days north-east of Lake Mweru, 4,000-5,000 feet, March, 1922, middle of rainy season, T. A. Barns, one ♀, also three ♂♂.

8. *Syrmoptera nivea* sp. nov.

This is possibly only a race of *melanomitra* Karsch. We have two forms of female which should apparently both be referred to the male here described. One female is like the male, and is from the collection of the late H. H. Druce. It bears a label: "♀ *S. melanomitra* K. Comp. type Berlin Mus., by H. H. Druce, Dec., 1912." This was evidently thought to be the female of Karsch's type which was found to be a male (cf. Druce, "Ill. Afr. Lyc.," p. 13, pl. v, figs. 1, 1a, 1910). It is certain, however, that specimens collected by G. L. Bates in the Cameroons, having a female like *homcyeri* Dew., represent the true sexes of *melanomitra*.

♂. Upperside similar to *melanomitra* ♂. Fore wing not perceptibly different. Hind wing with distal area beyond the cell from inner margin to vein 3 and a little beyond more or less suffused with white, snow-white in the type, and the anal spots stand out sharply on the white ground. In other respects this wing is marked as in *melanomitra*.

On the underside the only real difference to be found between this and *melanomitra* is in the absence of the orange marginal line, and in the three green anal spots being lightly edged with black on the inside.

♀. Similar to *melanomitra*. Fore wing with basal white area less extended, not reaching beyond discocellular, and just entering cellule 3.

Hind wing with a square black apical patch on the margin, its lower edge extending just below vein 6; anal angle with slight orange suffusion.

Underside of fore wing as in *melanomitra* female. Hind wing with basal line thicker and straighter than in the allied forms, orange marginal line absent, black edging to anal spots as in the allied form.

Length of fore wing: ♂ 16 mm., ♀ 16 mm.

Habitat.—Belgian Congo: Lubilinga Valley, North-East Lubutu, 2,600 feet, August, 1921, three ♂♂, three ♀♀ (♀ type); Upper Maiko Valley, north side, 2,600 feet, August, 1921, one ♂, one ♀ (♂ type); Tshopo Valley, north side, 2,400 feet, August, 1921, one ♀; Oso River, Lowa Valley, 2,600 feet, August, 1921, one ♂. Also one ♂ in Joicey Collection without locality.

9. *Syrmoptera nivea* ♀ f. *androgyna* f. nov.

Resembles the male, but paler blue. Fore wing with slightly reduced blue area. Hind wing with apical black extended to vein 5 and continued as a submarginal line to the spot in 2. White suffusion slight. Underside of hind wing with greater black edging to the anal spots.

Habitat.—Belgian Congo, Kasai district, P. Landbeck, one ♀, ex coll. H. H. Druce.

10. *Spindasis montana* sp. nov.

This form appears most nearly allied to *mozambica* Bertol, and as we have this species from the Katanga we must treat *montana* as distinct. A similar looking species is *natalensis* D. and H., but this is distinguished from *mozambica* and others by possessing a spot at the base of the costa on the fore wing below, and usually also a second subbasal costal spot.

♂. Upperside of fore wing with the yellow-orange markings larger than in the allied forms. A dusky patch, enclosing a spot of ground-colour, occupies the basal third of cell; a quadrate spot at end of cell between veins 2 and 3, and extending into the base of cellule 2; a postdiscal band as broad as the cell-patch, between veins 2 and 6, curving outwards and becoming broader below 4; a submarginal stripe between veins 4 and 6, posteriorly thinning out to a point which almost touches in cellule 3 the upper point of the expanded portion of the postdiscal band. Basal half of the interspace between vein 2, cell, and inner margin sprinkled with pale-blue scales, some of which have a roseate hue.

Hind wing with the costal area to below vein 6 fuscous-black, inner margin to above submedian paler fuscous, rest of wing violet-blue with a light sprinkling of whitish scales over the basal half. Anal lobe orange with a posterior black spot edged with silver, and from the submedian a silvery marginal line to vein 3. Distal margin edged with black to the inner angle, interrupted at the lobe. Fringe pale orange-yellow.

Underside with the ground-colour slightly more orange-tinted than in *mozambica*. Fore wing markings as in the allied form. The small cell-spot more orange; the black line bordering the outer edge of discal band only continued to the submedian fold, the black line on the inner edge stopping at vein 2; first submarginal line orange traversed by a thin black line which thickens below vein 3; second submarginal line orange. Inner margin without black suffusion at the outer angle.

Hind wing with the discal and postdiscal bands outlined by reddish-orange, the former with two black spots at costa and posteriorly with slight black edging, postdiscal band with a black dot on the inside at costa, and an outer orange spot between costa and vein 7. First submarginal line not touching the postdiscal band and thicker anteriorly than in *mozambica*; second submarginal line orange, well-marked.

Length of fore wing: 17 mm.

Habitat.—Belgian Congo: East Luvua Valley, escarpment five days north-east of Lake Mweru, 4,000-5,000 feet, March, 1922, middle of rainy season, T. A. Barns, one ♂ (type). Also in the British Museum, collected by S. A. Neave: Kambove, 4,000-5,000 feet, March 28, one ♂; Chambezi Valley, Kasama district, 3,900 feet, May 13, one ♂.

11. *Phasis conradsi* Auriv. ♂. form ochraceous f. nov.

Upperside markings coloured as in the female, and forming a similar patch on the fore wing. A dark spot in the cell, one on the discocellulars, and beyond this the ground-colour invades the ochreous colour to cellule 4. Hind wing with the band broader than in the typical form. Some specimens of *conradsi* have the band on the hind wing slightly ochraceous, and on the fore wing tinged with ochraceous to a less degree.

Habitat.—Tanganyika Territory: District of the Great Craters, February-March, one ♂. Also a series of the typical form from the Ngorongoro Crater, 5,800 feet, February, 1922.

12. *Cyclirius vulcanica* sp. nov.

Allied to *aequatorialis* Shpe. and possibly a race of this.

♂. Upperside as in the allied form but the marginal black a little wider.

Underside of fore wing with ground-colour darker than in *aequatorialis*, no grey apical suffusion, or just a trace, fringe more distinctly chequered. Hind wing with the grey costal patch narrower, the space between its outer edge and the postdiscal band broader; the grey-white postdiscal band narrower, and with a distinct cut in cellule 4, sometimes extending through the band.

♀. Upperside as in *aequatorialis*, but with more restricted greenish-blue, there being only a few scattered scales in 2 and 3. Underside as in the male.

Length of fore wing : ♂ 12-13 mm., ♀ 11 mm.

Habitat.—Tanganyika Territory, Arusha district, Great Craters : 7,000 - 7,500 feet, February, 1921, six ♂♂, two ♀♀ (♂ type); Olomoti Crater, 10,000 feet, February, two ♂♂, one ♀ (allotype); Ngorongoro Crater, 5,800 feet, February, three ♂♂, one ♀; Elanairobi Volcano, 8,800 feet, March two ♂♂, two ♀♀; also five ♂♂ from the same district, March, 1921.

13. *Cyclirius aequatorialis* Shpe. *marungensis* subsp. nov.

♂. More resembles *vulcanica* on the upperside, but the brown margins of the fore wing are even broader.

Underside with less grey-white suffusion than in the typical form. Hind wing with the costal patch mostly reduced, and the grey-white postdiscal band narrowed below vein 4.

♀. Upperside resembles this sex of *noquasa major* (described hereafter) except that the anal spot is small and with only a trace of blue scaling.

Underside as in the ♂.

Habitat.—Belgian Congo : Marungu Plateau, south-west Lake Tanganyika, 7,000 feet, February, 1922, T. A. Barns, sixteen ♂♂, two ♀♀.

The typical *aequatorialis* occurs further north in the Kivu District and Rugege Forest to Ruwenzori, and is slightly variable. We cannot separate the Kivu series from East African specimens.

14. *Cyclirius juno* Btl. *ruandensis* subsp. nov.

Differs from *juno* Butl. on the underside in the fore wing being scarcely marked, the hind wing with a more distinct discocellular spot, and the dark discal band more narrowly bordered with white.

♂ ♀. Upperside earth-brown. Hind wing with or without a small anal spot.

Underside of fore wing pale brown, a faintly marked discocellular spot, a small rounded subapical spot in cellule 6 but mostly indistinct, a faint trace of a whitish submarginal line and of a dark marginal border and fine whitish admarginal line. Fringe white, distally and at the veins dark-brown. Hind wing with white ground-colour and deep brown markings. Three basal spots, the one in base of cellule 7 most distinct; three well-marked discal spots, one in 7, one in the cell and an elongate one below cell; a discocellular spot with a central white line; a post-discal band of eight spots joined together, the one in 4 projecting more distad than the others, the one in 2 touching the discocellular spot, this band broader in some specimens and in one case fused with the lower part of the discocellular spot and discal spots over the discal area; the distal white border to the postdiscal band is narrower than this band; a lunulate submarginal line, heavily marked in 2 and 3; three small marginal spots in 4-6, ocellus in 2, a spot below it, extended to the post-discal band.

Length of fore wing: ♂ ♀ 13 mm.

Habitat.—Belgian Congo: Ruanda district, Rugege Forest, 8,000 feet, December, 1922, seven ♂ ♂, two ♀ ♀; Oso River to north-west Kivu district, August-December, 1921, one ♂.

15. *Cyclirius noquasa* Trim. *major* subsp. nov.

This form is distinguished by its large size.

♂. Upperside with the dark borders a little broader and anal spot larger.

Underside of fore wing with postdiscal band broader. Hind wing with discal band and white postdiscal band broader, marginal spots larger but less defined.

♀. Upperside as in some specimens of the typical form. Basal blue extended to midway between cell and margin, not above vein 3, nor over upper part of cell. Hind wing with blackish basal area to end of cell, this area dusted with blue. Anal spot larger, some specimens with a smaller spot in 3 and a vestigial spot at the anal angle.

Underside as in ♂.

Length of fore wing: ♂ 14-15 mm., ♀ 10-15 mm.

Habitat. — Belgian Congo: Marungu Plateau, south - west Tanganyika 7,000 feet, February, 1922, eleven ♂♂, five ♀♀ (types); Mkoma Mountains, South Urindi district, East Tanganyika, July, 1919, one ♂, two ♀♀; Mkoko River, Ruanda district, September, 1919, one ♂.

The specimens from the Ruanda show a more sharply defined white postdiscal band on the hind wing below.

HETEROCERA.

AMATIDAE.

16. *Metarctia bipuncta* sp. nov.

Figured in Barns' "Across the Great Craterland to the Congo," pl. lxxx, fig. 8, 1923.

This appears to be allied to *fuscous* Hmps., but it has longer wings, and the dots on the fore wing are white. The figure shows the characteristic shape, but the pattern suffers by reduction.

♂. Upperside of fore wing fuscous (xlv) speckled with black especially below the apex. A black discocellular spot with a white dot on its outer edge, a second similar black spot and white dot below the base of vein 2. Hind wing drab (xlv). Fringes of both wings edged outwardly with pink.

Underside drab speckled with fuscous. Fore wing with a discocellular mark. Whitish at tips.

Antennae fuscous. Head, palpi, thorax, abdomen and legs fuscous. Abdomen long, a little longer than hind wing.

Length of fore wing: 18 mm.

Habitat.—Rugege Forest, 8,000 feet, December, 1921, three ♂♂.

17. *Balacra erubescens* sp. nov.

Figured in Barns' "Across the Great Craterland to the Congo," pl. lxxx, fig. 3, 1923.

Apparently allied to *preussi* Auriv., but the fore wing with a reddish distal flush and only four post-cellular spots.

♂. Upperside of fore wing greyish-brown. A small pale yellow spot at end of cell, edged with crimson, and joined to a crimson streak through the cell to base. Four spots beyond the cell in 3-6, semi-hyaline with slight crimson scaling, in the paratype more hyaline; a pale-yellow spot slightly crimson-edged, below base of vein 2, in the paratype more

hyaline; a crimson basal streak below the submedian. Distal margin flushed with vinaceous-tawny (xxviii). Hind wing ochraceous-buff (xv), slightly crimson on costa and inner margin.

Underside paler. Fore wing with the cell mostly crimson, the spot small; the spot in 6 more strongly scaled with crimson, proximal area below vein 3 slightly yellowish. Hind wing more strongly washed with crimson than on upperside. Subcostal area pale-brown.

Head, thorax and abdomen pale-brown with crimson edgings, the abdomen mostly ringed with orange-red, and ground-colour inclined to grey. Antennae dark bluish-green, palpi crimson. Femora crimson, tibiae and tarsi greyish-green.

Length of fore wing: 24 mm.

Habitat.—Belgian Congo: Luvua River, 85 miles north of Lake Mweru, ca. 3,000 feet, April, 1922, two ♂♂.

ARCTIIDAE.

18. *Teracotona subflava* sp. nov.

Figured in Barns' "Across the Great Craterland to the Congo," pl. lxxx, fig. 4, 1923.

Allied to *subterminata* Hmps., but differs in the patagia being without black spots, and in the yellow hind wing.

♂. Upperside of fore wing with ochraceous-grey ground-colour, much sprinkled with mummy-brown, more especially in the distal and basal costal areas. A heavy distal line bent outwards at lower angle of cell, a thinner postdiscal line parallel to it, a trace of a submarginal. A black discocellular dot, a similar and larger dot opposite it in cellule 5 near the margin, a similar and less distinct dot near tornus above the submedian. Hind wing pale orange-yellow (iii), darker at the costa and the inner margin. A black discocellular spot, submarginal black marks in 1b, 1c, 2, 5 and 7, the one in 7 indistinct.

Underside of fore wing ochraceous-brown flushed with vinaceous, with a more or less strongly crimson basal costal area; black dots as on upperside. Hind wing as on upperside.

Head and thorax light greyish-olive (xlvi); antennae and palpi blackish-brown; femora and tibiae grey-brown, fore and mid-femora crimson above; tarsi black ringed with grey-white, end tarsal segment with orange tuft. Abdomen pale orange-yellow, ventral surface ochraceous-grey, a series of large subdorsal black spots and of small subventral spots.

Length of fore wing: 18 mm.

Habitat.—Rugege Forest, 8,000 feet, December, 1921, two ♂♂; Karissimbi Forest, Kivu, October, 1919, one ♂; Mikenno Volcano, Kivu, October, 1919, one ♂.

This species is without the areole in the fore wing. Vein 10 originates from the angle of the cell, is free, curved outwards, and approximates to 11 posteriorly.

The proboscis is aborted in two specimens and in the other two it is apparently absent. This occurs in *clara* Holl. where it is sometimes fully developed.

This species is placed by Hampson in the North American genus *Seirarctia*, but there are ample grounds for proving that *Seirarctia* is well removed from *Teracotona*. The genitalia of *Seirarctia* is quite different to several *Teracotona* we have examined. We may mention that in a ♂ and ♀ *Seirarctia echo* examined by us, vein 10 is stalked with 9, so evidently the position of this vein is not a reliable generic character.

19. *Teracotona pallida* sp. nov.

Figured in Barns' "Across the Great Craterland to the Congo," pl. lxxx, fig. 6, 1923.

Apparently allied to *subflava* nov., but is larger and of strikingly paler colour. It may possibly prove to be an aberration.

♂. Upperside ground-colour cream-buff (xxx). Fore wing mottled with greyish-black strigae, principally in the discal area; dark discocellular and submarginal spots as in allied forms. Hind wing with discocellulars outlined with black, and a slight orange suffusion in the submedian area.

Underside ground-colour as on upperside. Fore wing very faintly mottled; discocellular spot more distinct, a slight orange suffusion in the cell. Hind wing as on upperside.

Antennae dark brown, grey-white at the base. Head and thorax ochraceous - grey, palpi blackish - brown. Legs brownish - ochreous, femora reddish-orange above, middle and hind tarsi blackish-brown. Abdomen orange-yellow with black rings.

Length of fore wing: 20 mm.

Habitat.—Rugege Forest, 8,000 feet, December, 1921, one ♂.

20. *Teracotona multistrigata* sp. nov.

Figured in Barns' "Across the Great Craterland to the Congo," pl. lxxx, fig. 7, 1923.

♂. Upperside of fore wing with creamy ground-colour and numerous short black-brown strigae which are closer together in the proximal two-thirds of wings. A broad discal band, contracted below the cell, with the interspaces between the strigae filled in with orange-yellow; a similar and well-defined postdiscal line, angled outwards at vein 5; a rounded black discocellular spot, an ill-defined black submarginal dot in 5. The discal band and the postdiscal line are joined at the inner margin. Distal area much lighter than the rest of the wing. Hind wing pale orange-yellow (iii) and marked only with a dark, heavy, black discocellular spot.

Underside light orange-yellow (iii). Fore wing with the costa sprinkled with blackish-brown, a heavy black discocellular spot. Hind wing with costal area lightly washed with fuscous, discocellular spot as on upperside.

Head and thorax brownish-ochraceous, patagia with two black dots at the base; antennae and palpi blackish-brown; abdomen light orange-yellow; pectus orange-yellow mixed with brownish-ochraceous; femora orange-yellow above and brownish-ochraceous below, tarsi and tibiae black.

Length of fore wing: 22 mm.

Habitat.—Rugege Forest, 7,000 feet, December, 1921, one ♂.

Allied to *approximans* Roths., but a much darker insect, and further distinguished by the creamy ground-colour of the fore wing and the yellow hind wing.

21. *Carcinartia xanthica* sp. nov.

Figured in Barns' "Across the Great Craterland to the Congo," pl. lxxx, fig. 9, 1923.

♂. Upperside of fore wing ground-colour deep-chrome (iii), speckled with reddish-orange. Five lines defined by blackish dots, two crossing the cell, a postdiscal curved at the middle, a fourth parallel to the third, the fifth submarginal and indistinct, a dot at upper angle of cell, and one at lower angle. Hind wing carrot-red (xiv), with distal two-thirds dusted with black. A large black discocellular mark, and a submarginal black line, heavy at the anal angle, and partly interrupted.

Underside ground-colour ochraceous-buff (xvi). Fore wing with apical half dusted with black, a heavy black discocellular mark, two postdiscal outwardly curved lines, and an indistinctly defined submarginal one. Basal area washed with crimson. Hind wing with a > shaped black discocellular mark, an indistinct postdiscal line and a more heavily marked submarginal one, both somewhat interrupted.

Antennae greyish-white; head and thorax deep chrome, palpi deep chrome fringed with orange-red; abdomen carrot-red, yellowish at the base, a black dorsal line, and a blackish ventral line; anterior femora and tibiae orange marked with carrot-red, middle and posterior femora orange; anterior tarsi and middle and posterior tibiae and tarsi fuscous-black marked with carrot-red.

Length of fore wing: 18 mm.

Habitat.—West Kivu: Kisiba, Bugoie Forest, 8,500 feet, November, 1921, five ♂♂ (type); Virunga Mountains, 9,000 feet, October, 1921, one ♂; Rugege Forest, 8,000 feet, December, 1921, one ♂.

22. *Carcinartia kivuensis* sp. nov.

♂. Upperside of fore wing Prout's brown (xv) irrorated with brussels-brown (iii). Four black transverse lines. Subbasal angled outwards on the median, discal less strongly angled, postdiscal strongly curved outwards between veins 3 and 6, second postdiscal similarly curved though less so, and with a rounded black spot touching it, in cellule 5. Hind wing of a curious shade of pink nearly flesh-ochre (xiv), fringe more ochreous. A black discocellular spot. Submarginal black spots in three pairs, the upper united in 4 and 5, the others in 1b and 2, 1a and 1b divided by the veins.

Underside with the proximal areas flesh-ochre (xiv), distal areas ochraceous-tawny (xv) irrorated with fuscous. Fore wing with a black discocellular spot, the outer postdiscal line marked by a spot in 5, a submedian spot, and a small one above it in 2. Costal black bordered with ochraceous-tawny. Hind wing with spots as on upperside.

Antennae yellowish-brown, shaft cream-colour from about middle to tip. Head, palpi and thorax blackish-brown. Legs, with the exception of femora which are flesh-ochre, blackish-brown marked with ochreous. Abdomen flesh-ochre, marked with a row of subdorsal black spots, and a row of smaller subventral spots.

Length of fore wing: 17 mm.

Habitat.—Karissimbi Forest, Kivu, September, 1919, one ♂.

This species has not the areole in the fore wing, as is said to be the case in the generic type.

23. *Pericallia costimacula* sp. nov.

Figured in Barns' "Across the Great Craterland to the Congo," pl. 80, fig. 12, 1923.

♂. Upperside of fore wing with ground-colour cartridge-buff (xxx) mostly suffused by large spots of velvety fuscous-black (xlvi) outlined by

thin lines of ground-colour, the interspaces being filled up by Saccardo's umber (xxix). A small spot at base of wing, a larger spot next to it on the costa with a narrower one below this, a large oblong costal patch extending to the lower edge of cell, partly broken by a pale costal spot and by a slight indentation on its lower edge, a large apical costal patch having a small apical portion cut off by the ground-colour; the lower edge of these patches runs in line with the lower edge of cell. A sub-basal somewhat rounded patch below the cell, and touching the inner margin, a much larger median patch below the inner margin and vein 2, a third patch, about equal to the first one, placed at the tornus; a somewhat triangular-shaped distal patch between veins 3 and 5; discal interspace between these patches with a few dots and small spots of varying size; five fuscous-black fringe spots between the veins in 2 and 6. Hind wing pale orange-yellow (iii) with a slight tinge of crimson; faded black markings in the shape of a postdiscal stripe angled at vein 4, and a few submarginal spots; four fuscous-black fringe spots in cellules 2-5, and fringe fuscous-black at the apex.

Underside ground-colour as the hind wing above. Fore wing with patches as on upperside but faded in colour. Hind wing as above.

Antennae shortly bipectinate, pale-ochraceous. Palpi and frons blackish-brown, vertex dark-ochraceous, with a black spot at the base, tegulae dark-ochraceous with a large black spot, patagia and thorax black, the former fringed with pale-ochraceous. Abdomen peach-red (i), dorsally at the base pale orange-yellow, a black dorsal stripe, a sub-ventral line of black spots, ventral surface tawny-olive (xxix). Pectus Saccardo's umber (xxix), darker at the sides. Legs dark-ochraceous mixed with blackish-brown, femora peach-red on the outer side.

♀. Marked as in the ♂. Hind wing more reddish, and with larger markings. Underside ground-colour darker than in the ♂. Antennae serrate, anteriorly black above.

Length of fore wing: ♂ 16 mm., ♀ 21 mm.

Habitat.—Rugege Forest, Ruanda district, 7,000 feet, December, 1921, T. A. Barns, one ♂; Iufonso River, East Luvua Valley, north-east of Lake Mweru, 5,700 feet, February, 1922, T. A. Barns, one ♀.

AGARISTIDAE.

24. *Heraclia barnsi* sp. nov.

Figured in Barns' "Across the Great Craterland to the Congo," pl. lxxx, fig. 13, 1923.

We suspect this will prove to be a form of *grandis* Druce.

♀. Upperside ground-colour black. Fore wing with the spots cream-colour; cell-spot large and reaching within a little of the costal edge; median spot large as in *hornimanni* Druce, and therefore longer than in *grandis*; subapical band as in *grandis*, spots joined, and posteriorly farther from the margin than in *grandis*. One specimen (2/3) with the veins crossing the band more heavily black and the spot in 3 separated. The usual small spot at the tornus and the blue cell and costal marks of the group. One specimen (3/3) with a smaller spot on the submedian nearer to the median spot than to the base, and below it on the inner margin a patch of sparse cream scaling. Hind wing with broad crimson distal area, the outer edge of which is rounded outwards to vein 4 and incurved between this vein and submedian, thence rounded to the inner margin; the crimson area on the inner margin is dusky. Costa yellowish from base to about midway, in *grandis* dark-grey.

Underside of fore wing as on the upperside, and an additional spot in the cell near its base, absent in *grandis*. The crimson area on hind wing reaches almost to the base and does not extend above vein 8. Fringes black, white at the apex of both wings; in *grandis* the fringe of the hind wing is white.

Head, antennae, palpi and abdomen black, seventh and eighth sternite with slight fulvous scaling. One specimen (3/3) has the abdomen slightly fulvous and the other specimen (2/3) almost completely so. Legs as in *grandis*, black, femora white below, tibiae with a spot or band of fulvous.

Length of fore wing: 41—43 mm.

Habitat.—Lowa Valley, three days above Walikale, north-west Kivu, 4,300 feet, September, 1922, three ♀ ♀.

25. *Mimeusemia geraldii* Kby. *angustata* subsp. nov.

♂ ♀. Distinguished from the typical East African form by the narrow marginal band on the hind wing. The fore wing spots and markings on head and palpi are white.

Habitat.—Marungu Plateau, south-west Tanganyika, 7,000 feet, February, 1922, two ♂ ♂, four ♀ ♀ (types); Lindi River district, May-July, 1921, one ♂. There is a little doubt about the locality of the latter specimen.

We have some doubts about including this species in *Mimeusemia* and think it more nearly allied to *Charilina*. The frontal prominence,

the third segment of palpus, and the presence of only one dorsal crest placed on first segment of abdomen, indicate differences from *Mimusemia*.

In "Lep. Phal.," vol. iii, p. 609, the form *geraldi* Kirby is sunk as a synonym of *albigutta* Karsch, and the description given of Karsch's species is evidently a description of *geraldi*. The form *albigutta* has the pectus black, and comes from West Africa; *geraldi* may be a race of it, if not another species.

LIPARIDAE.

26. *Nygmia basipuncta* sp. nov.

♂. Grey-white. Fore wing slightly darker at base and along the costa. A small black subcostal dot near the base, a black discocellular spot.

Hind wing slightly darker on the outer margin. A black discocellular spot larger than on the fore wing. Underside of fore wing with some fuscous scaling along costa and at the apex.

Antennae greyish-white. Head, palpi, thorax and pectus ochreous-yellow; abdomen pale-ochreous.

Length of fore wing: 20 mm.

Habitat.—Ibima River, Ituri Forest, January, 1920, one ♂ (type); north-eastern outskirts of Ituri Forest, three days south of Irumu, February, 1920, one ♂. Taken at light.

This species is allied to *bigutta* Holl., but this is without the basal spot on fore wing.

27. *Orgyia nigrocristata* sp. nov.

♂. Upperside of fore wing grey-brown with black and white markings. A black subbasal spot from costa to below cell, with a black angled line from its lower edge to inner margin; a small black spot below the cell close to the subbasal spot. A black strongly angled discal line, indicated anteriorly by two small subcostal spots, the discocellulars outlined, the line continued more proximal and close to the discal line and not reaching the submedian; a second postdiscal line, broken below the costa and at vein 6, ending at vein 4; a third line placed at about the same distance from the second as this is from the first, strongly crenulate, and nearly parallel to the outer margin to vein 2 when it is bent outwards to the inner margin. A submarginal line, interrupted at the veins. Between the last postdiscal line and the apex are three black costal spots, and an elongate black spot below

them in cellule 7; a small black spot in 6 placed nearer the submarginal line than to the postdiscal; a dot below it in 5; a small spot in 4 placed here midway between postdiscal and submarginal lines; a similar spot placed below it in 3, but merged in a black suffusion which extends into 4 near the margin and into 2; a larger black spot in 2, placed near the postdiscal line; a still larger spot below vein 2 and situated more proximal. The black lines and spots are mostly edged with grey-white, and there is a well-marked white spot in the cell between the discal and postdiscal lines; costa, except between the first and third postdiscal lines, blackish; cellules 2-4 also blackish excepting a rounded spot of ground-colour near the margin. Ground-colour in areas 5-7 paler, and in other areas somewhat suffused with olive. Fringes pale-brown chequered with black.

Hind wing without markings, drab, dusted with purplish-brown, darker along the outer margin. Fringes paler brown than the ground-colour.

Underside pale yellowish-brown. Fore wing with costal edge smoky-brown, more so at base; cell smoky-brown except at base, with a slight suffusion over the distal area. The third postdiscal line on upperside marked below by a straighter line, accentuated at the costa, the angled costal part being duplicated by a similar mark distally of it. Hind wing with a black apical costal spot reaching vein 7; proximally of this a short black bar reaching vein 7; a blackish and ill-defined subanal spot in 1c; a faint discal line continued from the costal bar; a faint discocellular mark; costal edge darkened, and some sparse dark-brown scaling over the distal marginal area.

Antennae dark reddish-brown, pale-brown at extreme base; head and palpi black mixed with pale-brown; thorax black mixed with grey-white; pectus yellowish-white; abdomen drab. At side of thorax close to aural cavity is a black tuft. Abdominal black crests on the second, third and fourth segments, the first one much larger than the others. Fore legs only present, others lost, fuscous-black, femora and tibiae pale yellowish-brown on the outside, tarsi marked with pale yellowish-brown below.

Length of fore wing: 19 mm.

Habitat.—Irumu, west of Lake Albert, February, 1920, one ♂.

28. *Marbla semihyalina* sp. nov.

♂. Upperside white. Fore wing with distal area thinly scaled with black to cell, and narrowing to the tornus. A small discocellular spot. A distinct rounded black spot on vein 2 at its base, this spot variable and sometimes absent. Hind wing without markings.

Antennae fuscous, head, thorax, legs and abdomen greyish-white, last four segments of abdomen fuscous above. Head and thorax above yellowish.

Length of fore wing: 16 mm.

Habitat.—Ituri Forest, January, 1920, one ♂; Upper Iowa Valley, north side, September, 1921, one ♂ (type).

Also a series in the British Museum from Uganda.

THE LIPARID GENERA.

Stracena Swinh. and *Sapelia* Swinh.

Stracena, *Trans. Ent. Soc. Lond.*, p. 388 (1903) (type *fuscivena* Swinh., Niger).

Sapelia, l.c., p. 389 (1903) (type *limpida* Swinh., Niger).

When collecting at Kinchasa on the Congo, Mr. T. A. Barns obtained two Liparids "in cop." The ♂ agrees with *Sapelia limpida* Swinh., the ♀ agrees with *Stracena fuscivena* Swinh. The sexes present the characters of the two genera in the ♂ and ♀ respectively.

It is evident that *Sapelia* will have to sink to *Stracena*. The ♀ *limpida* Swinh. must be associated with the ♂ of some other form.

PTEROTHYSANIDAE.

29. *Hibridles ansorgei* Kirby albescens subsp. nov.

Figured in Barns' "Across the Great Craterland to the Congo," pl. lxxx, fig. 10 ♀, 1923.

♀. Distinguished by the white instead of brown hind wing. The white band of the fore wing is broader, more sharply defined, purer white and reaches below vein 3. Hind wing with the black margin narrower, and the white spot in 6 indistinct; edge of white area more deeply incised at the veins; discocellular mark much heavier.

Habitat.—Luvua River (east bank), 85 miles north of Lake Mweru, ca. 3,000 feet, April, 1922, end of wet season, one ♀ taken in the daytime.

♂. Closely resembles *venosa* Kirby, but appears to differ in the broader apical band on the fore wing, this band closer to the margin and reaching vein 4, and in the larger patch at the base of cellules 3 and 4. The white band on the fore wing of the female described above is represented here by an equally broad interspace between the edge of the dusky apical area and the end of cell.

One specimen, East Luvua Valley five days north-east of Lake Mweru, 4,000-5,000 feet, March, 1922, middle of wet season.

We think that there is little doubt about these insects being sexes of the same, and it is significant that the original specimens of *ansorgei* and *venosa* were taken at the same place on the same day, two other *venosa* being taken three days before.

EUPTEROTIDAE.

30. *Phasicnecus pellucida* sp. nov.

♀. Wings hyaline bearing a few small black spots. Fore wing with a spot in 2 and a smaller one above it in 3 placed about midway between cell and margin, a small streak in 6. Hind wing with a subanal spot in 2. Underside with only the upperside spots showing through.

Head, thorax and abdomen above white; frons, palpi, thorax and abdomen below pale-ochreous. Antennae with shaft white, branches fuscous.

Length of fore wing: 19 mm.

Habitat.—Lesse, Ituri Forest, January, 1920, one ♀, taken flying in the daytime.

Apparently allied to *peropalinus* Roths., *Nov. Zool.*, xxiv, p. 492, 1917

31. *Phasicnecus pulverulentus* sp. nov.

Figured in Barns' "Across the Great Craterland to the Congo," pl. lxxxi, fig. 13 ♂, fig. 15 ♀, 1923.

♂. Upperside of fore wing Naples-yellow (xvi) inclining to mustard-yellow (xvi), hind wing paler. Fore wing with a dark-yellow discal line placed just beyond the cell, indistinct above vein 7, but at this vein bent in to the costa. A postdiscal russet (xv) line, crenulate, and more heavily marked below vein 4; a submarginal line, just indicated above vein 4, and otherwise merged into a large russet patch between the two lines; this patch extends to between veins 5 and 6 and is much narrower on the inner margin; it is covered with small raised hyaline scales. Hind wing without markings.

Underside of uniform Naples-yellow, paler in distal area of fore wing where the upperside marking shows through. Hind wing unmarked.

Head and thorax apricot-yellow (iv), abdomen paler. Antennae blackish-brown, palpi reddish-brown fringed with yellow, legs blackish-brown, femora and tibiae with yellow hair.

♀. Upperside fawn colour (xl), underside paler. Fore wing with very indistinct discal dark line placed as in the ♂. Postdiscal line as

in the ♂ but less waved and more distinct anteriorly, and defining the edge of a distal band, slightly darker than the ground-colour, therefore less distinct than in the ♀; this band extends from the inner margin to the costa, and bears numerous hyaline scales as in the ♂.

Head and mesothorax anteriorly yellow, rest of thorax fawn-colour, abdomen fawn mixed with dull-yellow above, golden-yellow below. Antennae pectinate and ciliate as in the ♂.

Length of fore wing : ♂ ♀, 23 mm.

Habitat.—Lufira River, near Likasi Copper Mine, 4,000 feet Katanga, April 8, 1919, one ♂ (type); February 15, 1919, one ♀ (type). East Luvua Valley, five days north-east of Lake Mwaru, 4,000-5,000 feet, March, 1922, one ♂.

SATURNIIDAE.

32. *Epiphora autinori* Ob. *marginimacula* subsp. nov.

Figured in Barns' "Across the Great Craterland to the Congo," pl. lxxx, fig. 1, 1923.

♂. This distinct race is distinguished by the fore wing having the postdiscal lines indistinct and without any white submarginal marks. The hind wing with a submarginal row of large lunulate spots of purple madder, divided by the veins.

Upperside of fore wing blackish to beyond the cell, distal area to the marginal band dark purplish-red, strongly suffused with black and anteriorly more or less with dark ochreous. A large but narrow lunulate discocellular spot, its central part hyaline edged with white, with a bordering of dark-yellow and an outer border of black. Marginal band ochreous-yellow, paler on the inner edge. A black submarginal line from inner margin to vein 8, angled inwards on the veins, and between it and the inner edge of band, a series of four black circles in 2 to 5. A black eye spot in 6, its inner edge rounded, outer edge angled, and bearing a curved white line near the outer edge. Apical patch of purple madder, its outer edge only touching the margin at costa, and with upper part edged with black, inner edge angled, edged with white. Hind wing similarly coloured to the fore wing and with a similar discocellular spot. Ground-colour darker than on fore wing with a pale curved postdiscal band. Inner edge of the ochreous marginal band waved, this band mostly taken up by the lunulate spots mentioned above. A black submarginal line, thicker than on the fore wing, separated from the spots by a fine pale line, and indented on the veins.

Underside markings as above. Ground-colour more indian-red with less black suffusion. Fore wing with distinct pale postdiscal band, hind wing with the band much more strongly marked, brighter in colour and dusted with white, curved and broad on costa. The submarginal spots more brightly coloured than on upperside, and bordered on the inside with white tinged with yellow. Submedian area from postdiscal band to base paler brown.

Length of fore wing: 45-59 mm.

Habitat.—Belgian Congo: District of West Kivu, Kisaba, Bugoie Forest, 8,500 feet, November, 1921, two ♂♂ (type); Rugege Forest, Ruanda district, 8,000 feet, December, 1921, one ♂. Collected by T. A. Barns.

33. *Pseudaphelia simplex* Rebel f. *marginilinea* f. nov.

The form described by us as *basiflava*, pt. 1, p. 163, appears to be a form of the present insect. It is figured in Barns' "Across the Great Craterland to the Congo," pl. lxxxi, fig. 8, 1923. We have a specimen in which the proximal area of the fore wing is ochraceous, leading on to the form described below. The three forms have a similarly marked head and neck, *basiflava* has but slight traces of the ochreous on the thorax, more pronounced in the second form described here, and paler yellow in *marginilinea*.

♂. Upperside white, apical black extending to midway between cell and apex, the edge more sharply defined than in *simplex*, and continued narrowly to the tornus. Hind wing with a very narrow black edging on the outer margin.

Antennae black, head and thorax ochraceous, palpi slightly black at the sides. Abdomen greyish-white, ringed with orange-yellow, ventral surface blackish-brown, one specimen marked as in *simplex*. Legs fuscous, femora white below, tibiae ochraceous below. Pectus white.

Habitat.—Belgian Congo: Kondoloa district, Lindi Valley, 1,600-1,700 feet, May, 1921, one ♂; Ituri River district, March, 1920, three ♂♂. A specimen of the typical form was also obtained in the latter locality.

34. *Pseudaphelia simplex* f. *ochracea* f. nov.

♂. Black markings as in the typical form, rest of wing ochraceous. Underside with discocellular spots defined by black, absent in the typical form but in *basiflava* present either on both sides or on one side only.

Habitat.—Belgian Congo: Bafwasende, Lindi River, 2,000 feet, July 1921, one ♂.

BRAHMEIDAE.

35. *Brahmaea barnsi* sp. nov.

Figured in Barns' "Across the Great Craterland to the Congo," pl. lxxx, fig. 5, 1923.

Allied to *maculata* Conte, from Usambara, "Lab. d'Etude de la Soie," fasc. vii, p. 80, pl. xiii, fig. 3 (1911).

♂. Differs chiefly in the absence of any white markings, in the outer discal line of fore wing not touching the first postdiscal line, and the unmarked black basal half of hind wing.

Upperside of fore wing with the lines in the basal half less strongly rounded outwards than in *maculata*, the outer one at its farthest distant point below vein 2, leaving a space of about 5 mm. between it and the outer line of the distal area. A russet streak along the submedian fold, more strongly marked between the inner basal line and the outer discal line. Three large black spots defined by a russet edging at the bases of cellules 4-6, the one in 4 not so large as in *maculata*, with a rounded inner edge and distally pointed, the one in 5 larger than in *maculata* but shaped as the preceding, the one in 6 larger than the others and oval-shaped, a small and elongate spot is placed at the base of 7. Black apical spot as in *maculata* and similar submarginal spots, though they are much more rounded than in *maculata*.

Hind wing with four narrow postdiscal bands pale russet, and divided by thin waved lines of ground-colour, succeeded by the usual pale waved lines filling the distal area. Submarginal somewhat ovate spots, their inner edges pale-brown, outer edges dark-olive and separated from the narrow dark-olive margin by a thin black line incurved at the veins.

Underside as above, but the markings on the basal half of fore wing less distinct. Inner margin of fore wing pale-brown along its basal half. Hind wing with inner margin edged with greyish-white for a short distance near the base.

Head, thorax and abdomen black. Head with vertex pale-ochreous, tegulae and patagia more or less edged with brown. Antennae ochreous, palpi dark chocolate-brown, fore and mid legs paler brown, hind legs darker brown, fringe of the mid and hind tibiae pale-ochreous. Pectus black. Abdomen with a pale-brown dorsal line, and a pale-ochreous or brown lateral line, and a similar subventral line, a small rufous anal tuft.

Length of fore wing: 71 mm.

Habitat. — Ruanda district, Lake Kivu, Rugege Forest, 7,000-8,000 feet, December, 1921, three ♂♂, T. A. Barns.

PSYCHIDAE.

36. *Monda nigroapicalis* sp. nov.

♂. Upperside white, hind wing more thinly scaled. Fore wing with discal area to the cell and vein 2 fuscous-black, the costa similarly coloured though more thinly scaled.

Antennae, head, thorax, and abdomen black: frons white, legs dark-brown with slight fringes of white hairs. Abdomen with sparse white vestiture.

Length of fore wing: 13 mm.

Habitat.—Lukuga River, West Tanganyika, June, 1919, one ♂ (type); Kundelunga Plateau, South Katanga, 4,000-5,200 feet, June, 1922, one ♂.

The latter specimen has the fuscous-black area reaching only to vein 3, and the costa has only very slight dark scaling.

37. *Monda immunda* sp. nov.

♂. White, wings rounded. Fore wing with blackish-brown apical suffusion extending to near middle of cell, thinly to vein 2 and along the margin.

Antennae with shaft white, branches fuscous. Head, thorax and abdomen blackish-brown, some white vestiture on ventral surface. Femora dark brown, tibiae and tarsi dirty-white.

Length of fore wing: 10 mm.

Habitat.—Western slopes of Ruwenzori, 2,500 metres, December, 1919, two ♂♂, taken in the daytime.

This species appears allied to *junctimacula* Hmps.

CHARIDEIDAE.

38. *Charidea semiaurata orbiculata* subsp. nov.

♂♀. Distinguished from the West African *semiaurata* Walk. by the narrower band on the fore wing, and the more rounded spot. In one specimen the band does not reach vein 7 nor vein 2, and is pale-yellow. The band is anteriorly rounded as in *vicaria* Walk., and not cut straight at upper edge of cell as in *semiaurata*.

Habitat.—Kivu district: Kissenji, September and October, seven ♂♂, three ♀♀; Kabati, one ♂; Kissenji, Ruanda district, 5,000 feet, November, one ♂.

39. *Charidea splendidissima* sp. nov.

♂. Upperside of fore wing with black ground-colour and markings of light-blue, strongly metallic.

Five blue spots along the costa, a cell stripe from base to vein 2; reaching below margin of cell and joined to the first three costal spots; a large spot at end of cell and one beyond it, hour-glass shape, both touching the costal spots, and the outer spot with a spur in cellule 6; a broad blue median stripe in 2 and 3 from the edge of cell to near margin where it fades out, joined at the middle of vein 2 by a columnar spot to the stripe occupying the inner margin. Distal margin with a deep-green flush. Hind wing dark metallic blue-cyaneous.

Head and thorax bluish-black, marked with bright metallic-blue antennae and palpi bluish-black; abdomen bright metallic-blue banded with bluish-black, and with five white ventral spots; legs bluish-black marked with metallic-blue, mid and hind tibiae with a white spot on the outside, hind tibia furnished with a hair tuft in a pocket as in other members of the genus.

Length of fore wing: 21 mm.

Habitat.—Cameroons: Bitje, October, wet season, one ♂ taken by G. L. Bates.

NEW FORMS OF INDO-AUSTRALIAN BUTTERFLIES.

BY J. J. JOICEY AND G. TALBOT.

PAPILIONIDAE.

Papilio (Troides) helena oblongomaculatus Goeze.ab. *sordidus* ab. nov.

♂. This specimen was in the Grose-Smith Collection labelled "Grosesmithi type" in Grose-Smith's writing, with the locality "New Guinea." We cannot trace any published description. The name "Grosesmithi" cannot be used as it is now preoccupied in African *Papilios*.

This specimen is more likely to have come from the Moluccas than from New Guinea.

Hind wing markings as in *oblongomaculatus*; cell-patch indented at the base, post-cellular patches in 2 and 3 shorter; patch in 4 absent, only a thin yellow edging to the veins, the right wing with basal part of this patch present; patch in 5 more indented on its edge and bearing a smudge of black; patch in 6 rounded outwardly; end of cell with a smudgy black spot and some scattered black scaling.

Underside of hind wing without black smudges, patches 2-5 more produced on the veins than in typical form, and their outer edges with diffuse greenish dusting.

Papilio polydorus Schoutensis subsp. nov.

Intermediate between the Waigeu and Mefor races.

♂. Upperside of fore wing with more grey scaling than in either of the allied forms. Hind wing with the outer edges of the discal spots less sharply defined than in the other forms; red anal spots indistinct as in the Waigeu form.

Underside of hind wing with a small white spot in 6 placed on the edge of the red spot, and some slight white scaling on the edge of the red spot in 7; in one specimen there are only faint traces of these white marks.

♀. Resembles the Waigeu form. Hind wing above with outer edge of discal spots less sharply defined than in the allied form, being bordered by a pale shade. Below with some white scaling on the red spots in 6 and 7. Discal spot in 5 larger than in the Mefor race and not so long as in the Waigeu form.

Habitat.—Schouten Islands, N.E. New Guinea: Biak, June, 1914, A., C., and F. Pratt, eight ♂♂, nine ♀♀.

Papilio polydorus wangaarensis subsp. nov.

♀. This form is allied to the Mefor race. The two red anal spots on the hind wing are more distinct, the anal spot being larger than in *meforanus* Roths. Distal spots purer white.

Underside of fore wing with the white stripes in cellule 2 not filling up the base of the cellule in most specimens, and mostly these stripes are less distinct than in the allied form. Hind wing with the discal spot in 2 not filling the base of the cellule except in one specimen.

Habitat.—Wangaar River, S. Geelvink Bay, Dutch New Guinea, about 15 miles inland, January, two ♀♀; Wangaar, February, six ♀♀; Djalan River about 25 miles inland, May-June, four ♀♀; Wei Sai River, Weyland Mountains, 1,000 feet, early June-July, one ♀. Collected by C., F., and J. Pratt.

PIERIDAE.

Delias aglaia L. *goda* Früh. ♀ f. *flavifascia* f. nov.

This form only differs from the typical female by the band of the fore wing being yellow instead of white.

A single specimen in coll. Paris Museum, labelled "Pajakombo, Sumatra (1911, Doncaster)."

Gandaca harina cuneata subsp. nov.

♂. Allied to the New Guinea race *aiguina* Früh.

The black border of the fore wing narrower than in *aiguina* and apical area smaller. One specimen from Teloeti Bay has only a dark dusting along the margin.

♀. Fore wing with narrower black border than in *aiguina* and its edge more irregular; a wedge-shaped indentation on vein 4, a sharp tooth between veins 5 and 6, and one between 6 and 7. Occurs in both a yellow and white form.

Habitat.—Central Ceram, Manusela, 6,000 feet, October and November, eight ♂♂, four ♀♀ (one white form); 4,600 feet, January,

one ♂ ; 2,500 feet, October and November, one ♂ ; Teloeti Bay, S. Ceram, February, three ♂ ♂ .

Types ♂ ♀ from 6,000 feet.

NYMPHALIDAE.

Cynthia erota dioneia Früh. ♀ .

C. erota dioneia Frühst., Seitz' Macrolep., ix, p. 480 (1912) (Sula Islands).

This female much resembles *buruana* ♀ , but the distal area of both wings is yellow-brown, and the basal area paler than in the other form.

Fore wing with the postdiscal black spot smaller, and with one white subapical spot in 7 smaller than in *buruana*. Submarginal line a little nearer the antemedial line. Hind wing with the white band more tinged with bluish and its outer edge better defined than in *buruana*. Some specimens with a small ocellus in 4 or in 6 ; ocelli more broadly ringed with yellow-brown and the blue pupil smaller. Submarginal line a little nearer the antemedial line. Tail as in *buruana*.

Underside much as in *buruana*, the basal area of fore wing and of hind wing to below cell pale yellow-brown. A similar but slightly darker coloration extends over the distal area to the submarginal line, less strongly above vein 4 of fore wing and below vein 5 of hind wing.

Length of fore wing 54-56 mm.

A series of both sexes from the Sula Islands, June, July, September, 1918, W. J. C. Frost.

Cynthia arsinoë sulaensis subsp. nov.

This insect less resembles *arsinoë* than *erota* in general appearance. We have retained *dioneia* as an *erota* form as Frühstorfer compares it with *celebensis*. Both *dioneia* and the race here described were received in the same collection and both were taken in the period June, July September. They differ anatomically.

In both the valve is produced on its dorsal edge to a narrow finger-like process, and on its ventral side it forms a triangular lobe ; between this lobe and the dorsal process is a similar but smaller lobe very weakly chitinized.

In *sulaensis* the dorsal process of the valve is thickened posteriorly from about midway and from this point to the base is joined the edge of the small lobe.

In *dioneia* the dorsal process gradually widens posteriorly, and the edge of the small lobe is not attached to it.

We have some hesitation in assigning *sulaensis* to *arsinoë* and do so provisionally. It may well be that this form was collected on one of the Sula Islands where *dioneia* is not found. Unfortunately, although Mr. Frost visited both Sula Mangoli and Sula Besi he mixed his captures.

Fore wing not so falcate as in *dioneia* but more so than in *figalea* Früh.; outer margin more even than in *dioneia* but less so than in *figalea*. Tail of hind wing shorter than in *dioneia* but not so short as in *figalea*. Fore wing with ante- and submarginal lines as in *dioneia*, latter line vestigial below the submedian. Post-discal black dots generally more strongly marked than in *dioneia*. Discal line of marks less straight than in *dioneia*, the two posterior ones outwardly curved.

Hind wing with the ante- and submarginal lines mostly closer together; ocelli a little smaller than in *dioneia*; discal line more distinct and crossing the base of vein 3, in *dioneia* this line passes below the base of this vein.

Underside darker and more reddish than in *dioneia*, the distal areas flushed with violet, stronger on the hind wing. Fore wing markings much less defined than in *dioneia* and discal line more narrowly bordered with paler-brown. The discal line placed farther from the cell than in *dioneia*, more oblique, and shifted well inwards below vein 3. Hind wing markings more distinct than on the fore wing, but the dark post-discal line found in *dioneia* is here only faintly indicated. Discal line narrowly bordered with grey-white, broader anteriorly; this line more sinuous than in *dioneia* and passing just beyond the base of vein 3; in *dioneia* it passes below the base of this vein.

Length of fore wing: 46—49 mm.

Habitat.—Sula Islands, June, July, September, W. J. C. Frost, a series of ♂♂.

Cynthia arsinöë aruensis subsp. nov.

♂. Similar to the typical form but markings less distinct. Fore wing with the margin and antemedial line less strongly black; submarginal series of spots situated more proximal; discal line of marks thinner and sharper. Basal area without black dusting.

Hind wing submarginal spots larger and less defined; ocelli a little smaller, discal line only faintly indicated.

Underside of fore wing with submarginal spots distinct in 1c, 2, 5 and 6; discal mark in 2 curved inwards. Hind wing paler than in

typical form, submarginal spots farther from the margin and less strongly pale-edged. Discal line straighter, some whitish scaling between it and the faint postdiscal band.

Habitat.—Aru Islands, March-May, 1916, W. J. C. Frost, four ♂♂.

Hypolimnias bolina lisianassa Cram. ♀ f. *signata* f. nov.

♀. Ground colour warm-brown, fore wing darker, hind wing blackish at the base. Fore wing with white costal band of four spots edged with blue; postdiscal row of dots bluish-white; submarginal lines and apical area fulvous, as also a small patch on the inner margin. Hind wing with a small discal patch of blue dusting; postdiscal spots and submarginal line fulvous. Underside of fore wing with the apical area to vein 3 ochreous-brown, of hind wing with basal area, distal and inner margins ochreous-brown, postdiscal area paler, discal area blackish; other markings whitish-brown, the costal spot and postdiscal dots paler.

Habitat.—Central Ceram, 3,000 feet, December, 1919, C. F. and J. Pratt, one ♀.

Apaturina erminea aruensis subsp. nov.

♂. Very like the New Guinea race *papuana* Ribbe. Fore wing band a little paler as in some Amboina specimens, but the spot in 2 is not so large as in the Moluccan form. The basal bluish area is smaller than in the allied forms, being less extended below vein 2. Hind wing with a more extended green gloss (seen by tilting the insect) over the distal part of the blue area.

Underside of fore wing only slightly different to *papuana*. White spot at tornus smaller, and white scaling along the margin indistinct. Ocellus more thinly edged with orange; the two blue discal marks a little larger, and a little less oblique. Hind wing with the postdiscal dark band, which follows the discal line, less sharply defined, especially on the outer edge. Submarginal and antemarginal lines thinner anteriorly and closer together.

Habitat.—Aru Islands, March-May, 1916, W. J. C. Frost, three ♂♂.

THREE NEW SOUTH AMERICAN BUTTERFLIES.

BY J. J. JOICEY AND G. TALBOT.

PAPILIONIDAE.

Papilio aglaope Gray *ecaudatus* subsp. nov.

This form is especially noticeable by the absence of a marginal prominence at vein 4 of the hind wing, a character found in all the allied forms.

♂. Upperside: Fore wing band placed a little farther from the cell, below vein 3 less broad than in the typical form; two small white spots below vein 2 and within the edge of the green patch. Hind wing with a small red spot in 6, dusted with black; proximal edges of discal spots not dusted with black.

Underside as in typical form. Fore wing with band of four small white spots. Hind wing with five red discal spots and a small anal spot.

♀. Very different to the typical form. Fore wing band of three spots occupying the same position as the white spots in the ♂, larger than in the ♂, their outer edges nearly straight; an indistinct fifth spot in cellule 4. Hind wing with the band placed as in the ♂, paler apical spot larger and rounded, also two anal spots.

Underside as above, spots of hind wing paler.

Habitat.—Matto Grosso, Cuyaba, Corumba River System, one ♂ one ♀.

Papilio erlaces lacydes ♀ f. *parvifascia* f. nov.

♀. Fore wing with only two small white spots placed in 3 and 4, the lower one larger than the other, their outer edges placed as in the typical form. Hind wing spots a little shorter than in typical form, those in 2 and 3 narrower and rounded on the inner edge.

Habitat.—Canelos, Ecuador, 700 to 800 metres, one ♀.

SATYRIDAE.

Euptychia virgata sp. nov.

This specimen was in the Grose-Smith Collection labelled "N. Gen., N. sp." We find, however, that in neuration and in palpi it agrees with *Euptychia*.

♂. Unlike any known form in the absence of ocelli and the curious striped pattern below. Upperside fuscous with vein stripes and submarginal line showing from below.

Underside yellowish-grey, the margin grey-white. Fore wing with the veins edged with fuscous and other stripes of the same colour, one from base along upper edge of cell, one through the cell from midway between base and vein 2 to between veins 10 and 11, and slightly curved, one across end of cell from its upper angle to just below 3 when it is slightly curved outwards to the inner margin; a thicker postdiscal stripe (nearer margin than to cell) from inner margin to vein 3 above which it becomes a faint line which follows the curve of the margin to the costa; a distinct submarginal line from apex to inner margin. The inner margin to vein 2 clouded with fuscous, and cellule 2 slightly dusted with this colour. The inflated base of costa is yellow-brown.

Hind wing with markings similar to those on fore wing. A sub-basal stripe, a stripe crossing middle of cell, and one crossing cell near its end and cutting the bases of veins 2 and 5, these three stripes fairly straight from costa to inner margin. A thin postdiscal line (nearer margin than to cell) parallel to the outer margin. Veins 1b, 2—6 edged with fuscous. Anal angle below vein 2 orange-yellow, bearing two silvery dots.

Length of fore wing: 15 mm.

Habitat.—Leopoldina, Brazil, coll. Michs. As there is more than one place of this name in Brazil, we are uncertain as to which area the name applies.

LIST OF PAPERS

Published Elsewhere since Previous List.

(Continued from the BULLETIN, p. 15.)

40. 1921.—A. E. Prout. "Notes on some Noctuidae in the Joicey Collection, with Descriptions of New Species," *Annals and Magazine of Natural History*, Series 9, vol. viii, p. 1.
41. 1923.—Joicey and Talbot. "New Forms of Butterflies from Buru," *Entomologist*, vol. lvi, p. 25.
42. 1923.—A. E. Prout. "A New Eligma (*Lep. Noctuidae*) from Tanganyika Territory," *Entomologist*, vol. lvi, p. 85.
43. 1923.—Joicey and Talbot. "A New Papilio from the Philippine Islands," *Entomologist*, vol. lvi, p. 273.
44. 1924.—Joicey and Talbot. "Descriptions of Four New Butterflies," *Entomologist*, vol. lvii, p. 37. *Aphysoneura* (1), *Mimacraea* (2), *Telegonus* (1).

A total of thirty-eight new forms were described in the papers mentioned above.

CORRIGENDA.

Mylothris interposita J. and T., BULL., p. 44, pl. IX, fig. 1.

This sinks to *solilucis* Schultz, "Ent. Rund.," 31 Jhr. No. 12, p. 70 (1914) (S. Cameroon). "Ergb. Zweit. d. Zent.-Afr. Exp.," Bd. i, p. 542, t. xxvii, fig. 2 (1917).

Euxanthe crossleyi intermedia J. and T., BULL., p. 75, pl. XIII, figs. 36, 37.

This sinks to *magnifica* Rebel, "Am. K. K. Naturhist. Hofmus., Wien," Bd. xxviii, p. 252 (1914) (Mawambo to Irumu).

Pentila auge congoensis J. and T., BULL., p. 81, pl. XIV, fig. 51.

This sinks to *catauga* Rebel, "Am. K. K. Naturhist. Hofmus., Wien," Bd. xxviii, p. 263, t. xxii, fig. 46 (1914) (Beni).

BULL., p. 203, line 4.—For *viridicans* read *viridata*.

BULL., p. 215.—Insert Subfamily name *Acontianae* before *Sinna joiceyi*.

BULL., p. 223.—*Ulothrichopus macula reducta* A. E. Prout. In last line of description, for the words "New Guinea specimens" (crept in in error) substitute "typical *macula*."

BULL., p. 270.—For "*Aglaope*" read *Agalope*.

BULL., p. 286, line 2.—For "*submixta* Warr." read *submixta* Prout.

BULL., p. 311.—For "*Delias kummeri* Jord." read *kummeri* Ribbe.

BULL., p. 318.—For "*Delias albertisi* Honr." read *albertisi* Ob.

BULL., p. 337.—For "*Charaxes penrici*" read *penricci*.

BULL., p. 339.—For "*Pieris brassicoides* Luc." read *Pieris brassicoides* Guér.

Tellervo assarica waigeuensis J. and T., BULL. HILL MUS., vol. i, part 2, p. 343 (1922).

This name sinks to *macrofullax* Strand, "Mitt. Zool. Mus., Berl.," Bd. v, Heft 3, pp. 477-478 (1911) (Waigeu).

BULL., p. 363.—For "♀ f. *brujni* Ob." read *bruijni* Ob.

BULL., p. 384.—For "*P. mackinnoni* f. *unimaculatus* Suff." read *immaculatus* Suff.

BULL., p. 511.—For “ (pl. VII, figs. 7, 8) ” read (pl. VII, figs. 8, 9).

Hypocysta osyris waigeuensis J. and T.

Ann. Mag. Nat. Hist. (8), xx, p. 218 (1917) (Waigeu).

We are indebted to Dr. K. Jordan for pointing out that this form is the true *osyris* Bdv. which was described from Offak. Most authorities have erroneously given the habitat as Aru.

Papilio benguetana J. and T.

Entomologist, vol. lvi, p. 273 (1923).

In publishing the description of this insect we were unable to give the name of the actual collector, having received the specimen indirectly without such indication. The discoverer, Mr. C. F. Baker, makes allusion to this regrettable omission in his “Second Addition to Philippine and Malayan Technical Bibliography,” *Philipp. Agr.*, xii, No. 8, 1924.

We take this opportunity of giving the matter further publicity as we agree with Mr. Baker that “the discovery of a new *Papilio* is quite an entomological event.”

We hope that Mr. Baker will obtain more specimens and establish whether the species is double-brooded like *xuthus*.

Mr. Baker says that the specimen was taken at high altitude on Mount Santo Tomas at Baguio, Benguet Sub-Province, Northern Luzon.

Telegonus domingensis J. and T.

Entomologist, lvii, p. 39 (1924).

This sinks to *antiquus* Skinn., *Ent. News*, xxxi, p. 133 (1920). Dr. Skinner kindly pointed this out in sending his paper.

We find that *Thymele angustus* Skinn., l.c. p. 133, will have to sink to *Telegonus christyi* Shpe., *Proc. Zool. Soc.*, 1898, p. 366.

BULL., p. 371, line 2.—For “*latreillanus*” read *latreillianus*.

LIST OF PLATES IN PART 3.

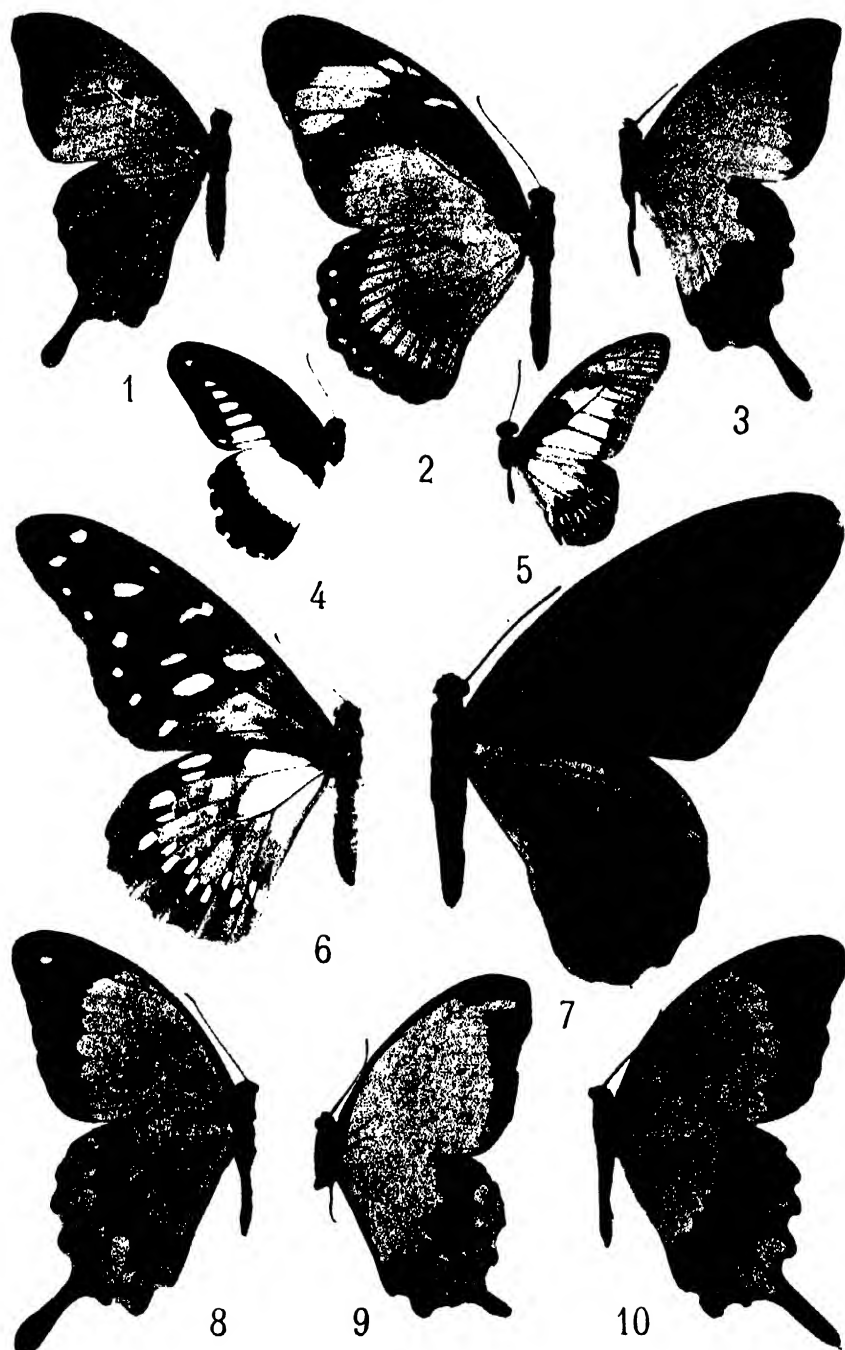
- I-V.—African Papilios. To illustrate Article 1.
- VI.—New *Delias* from Buru. To illustrate Article 12.
- VII.—New *Delias* from New Guinea and Buru. To illustrate Article 12, and article on *Delias* in Part 2.
- VIII.—New *Delias* from New Guinea. . . . To illustrate article on *Delias* in Part 2.
- IX.—New Butterflies from Buru and New Guinea. To illustrate species described in Parts 2 and 3.
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- XII.—New Zygaenidae. To illustrate article on Zygaenidae in Part 2.
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- MAP.—To illustrate Article 13.

PLATES I—V.

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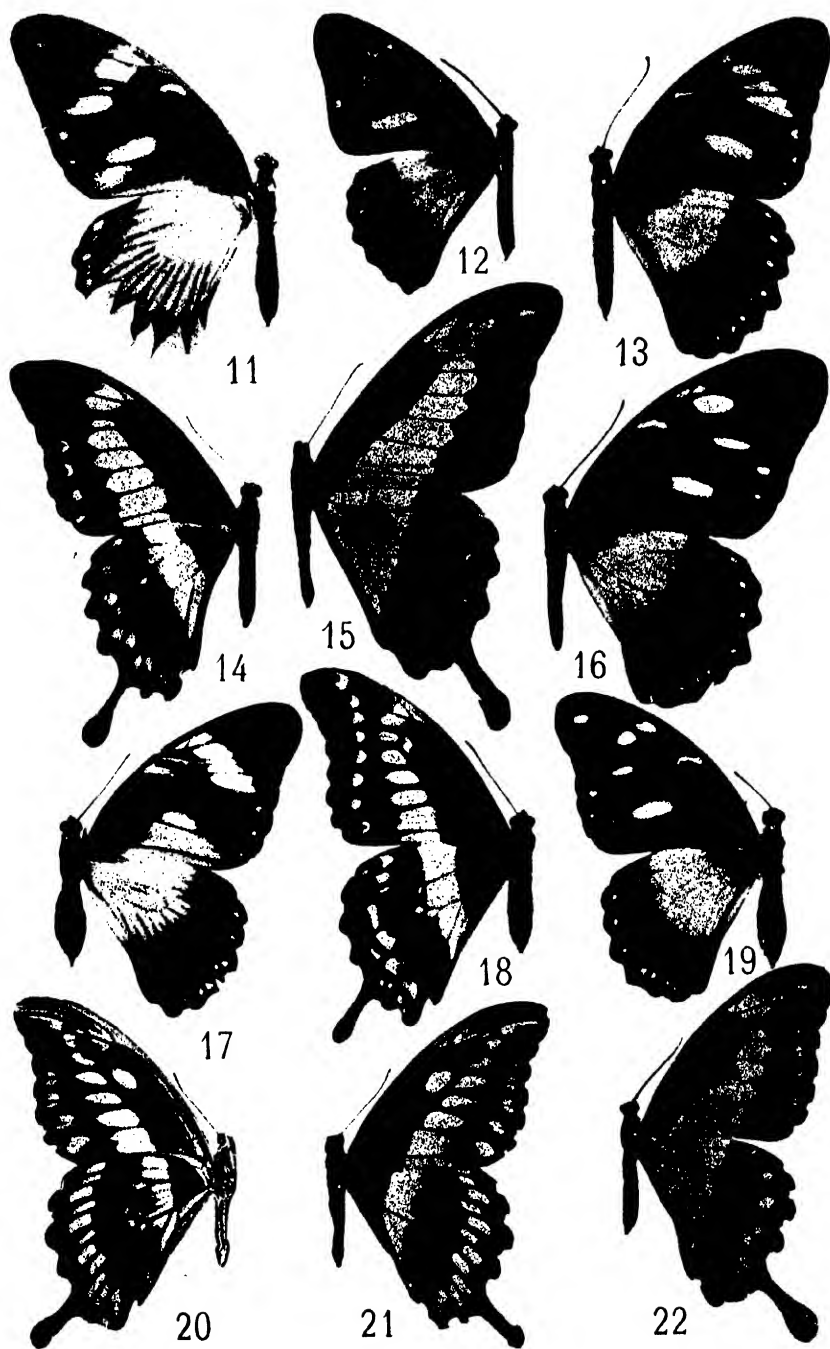
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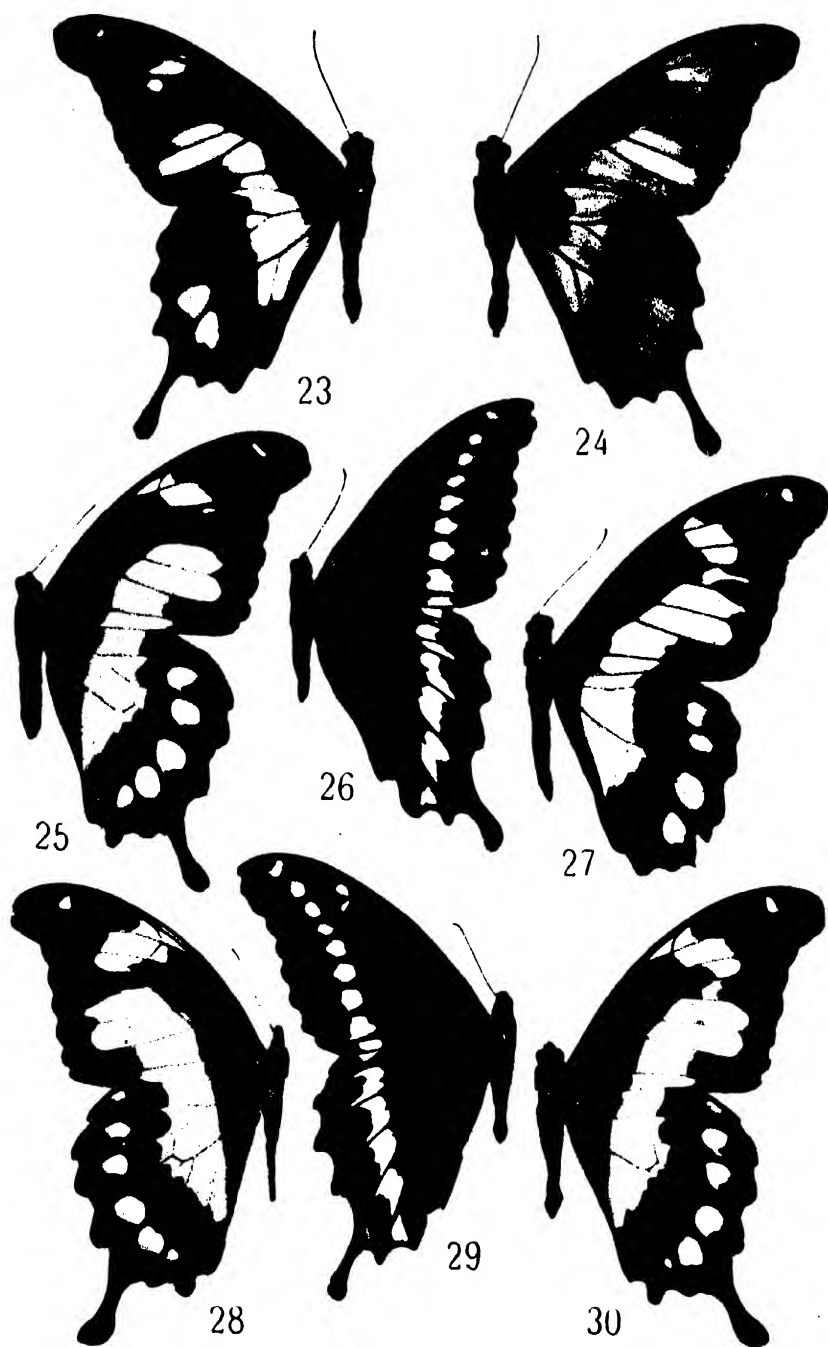
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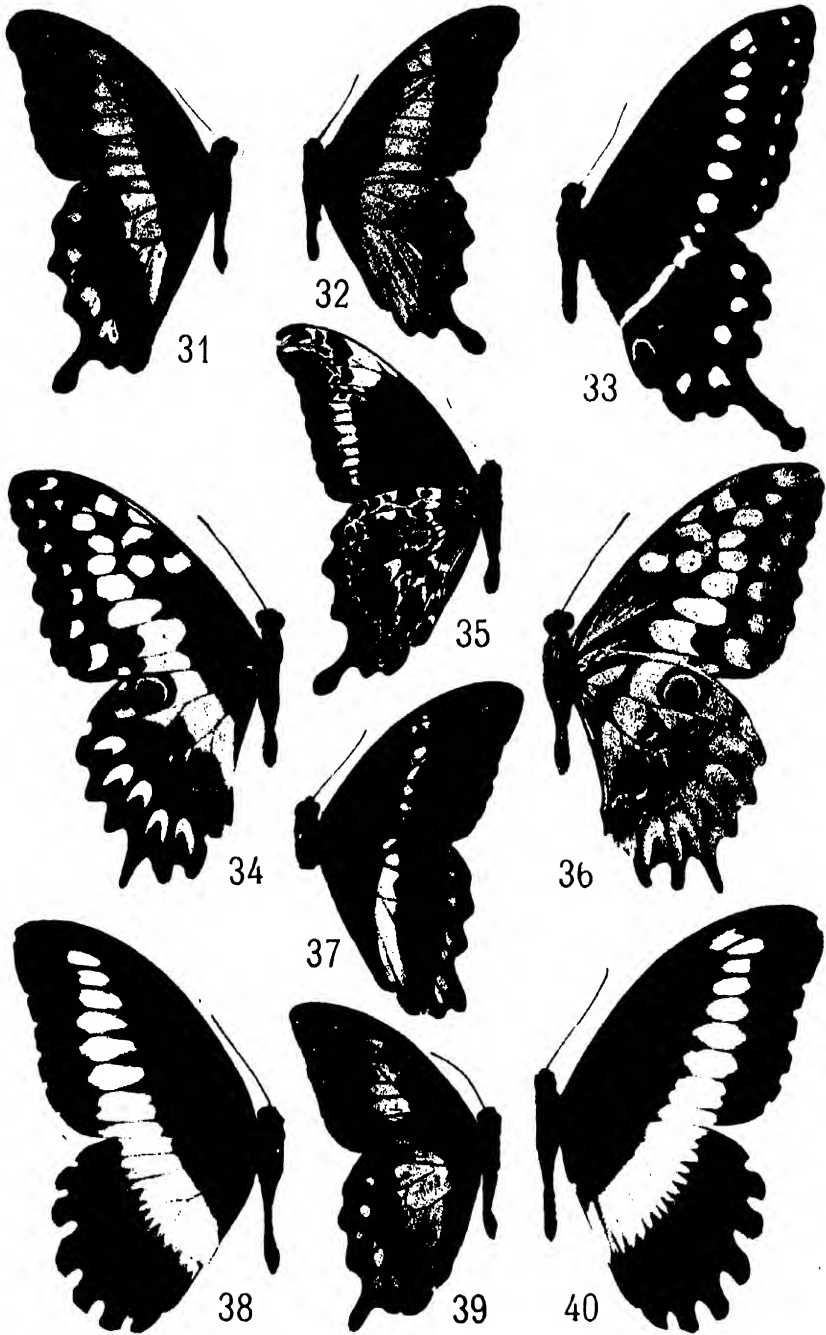
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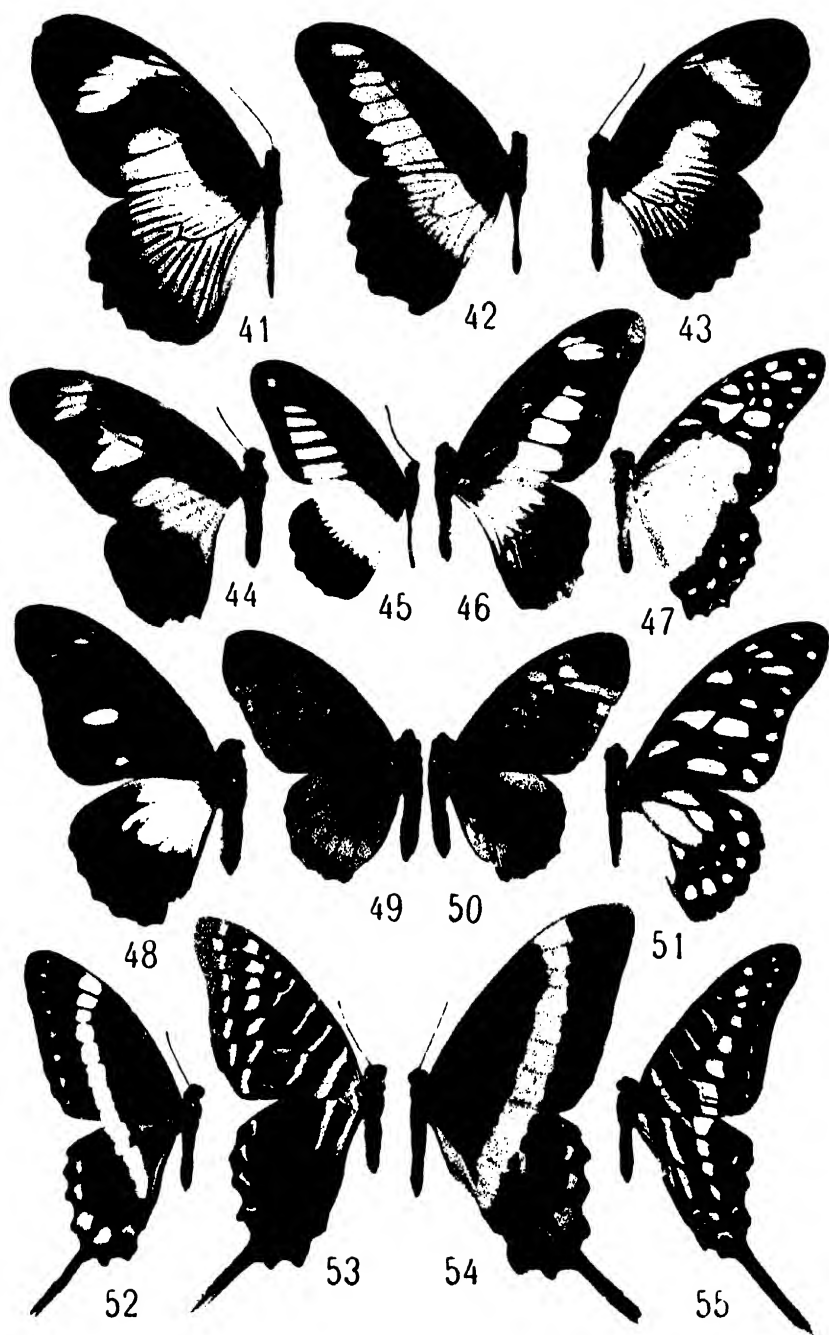
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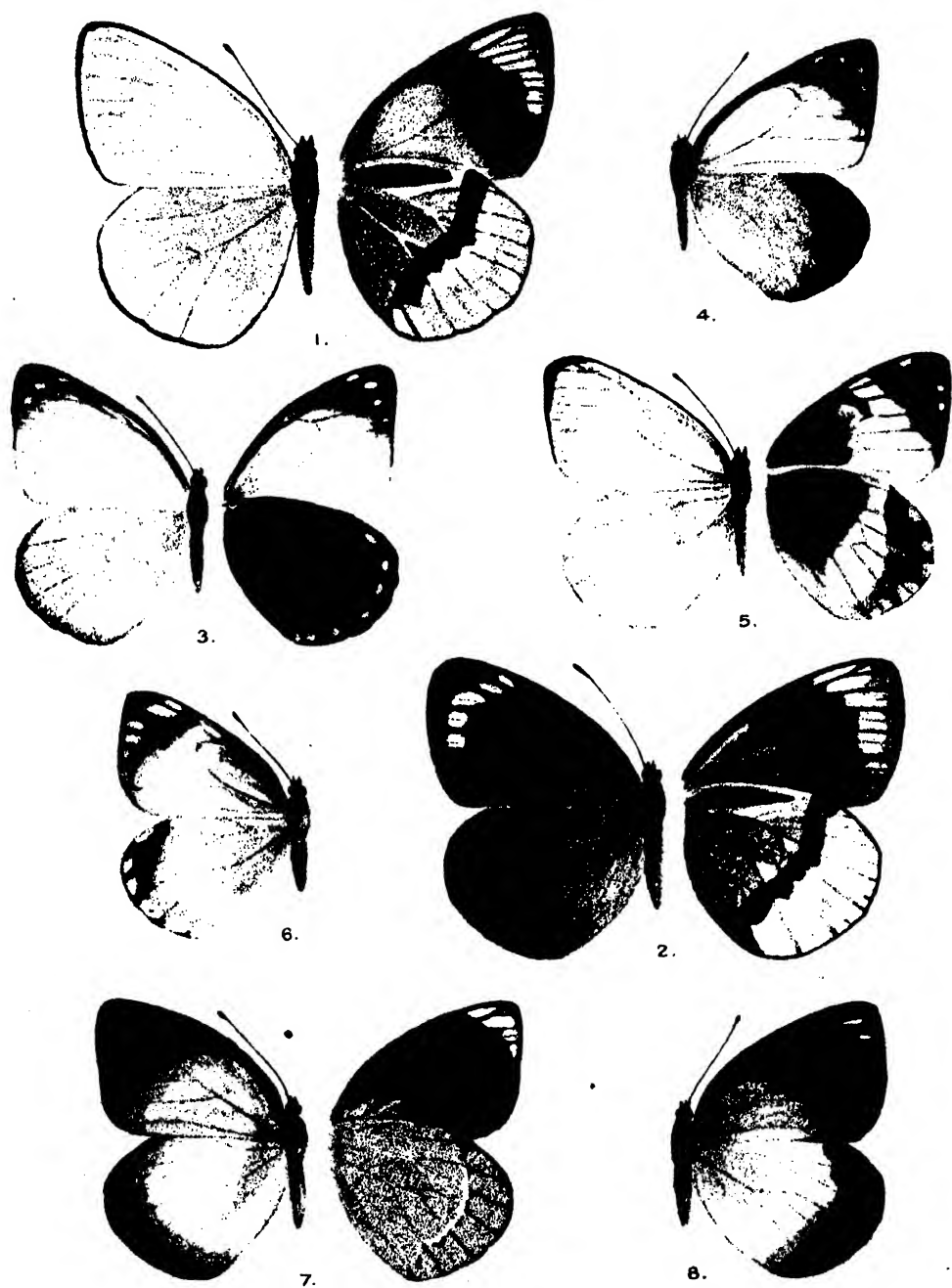
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A. E. Prout, del.

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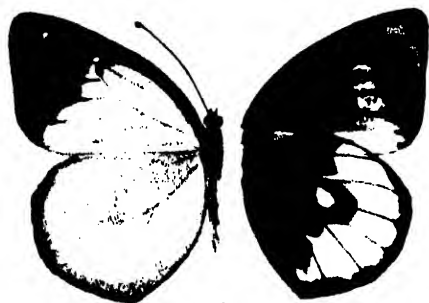
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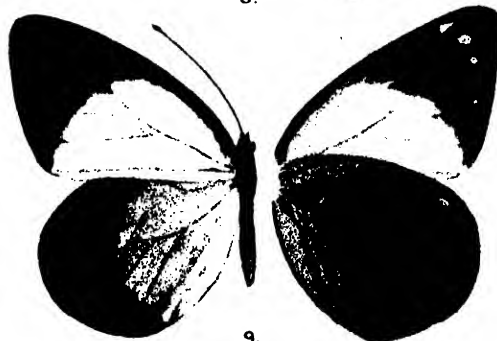
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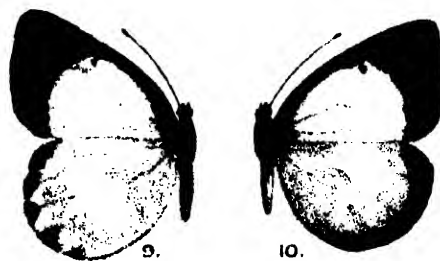
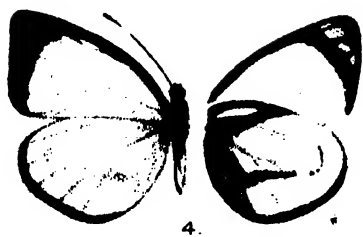
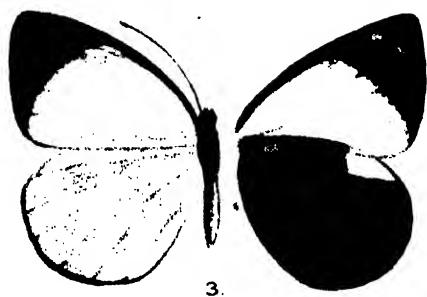
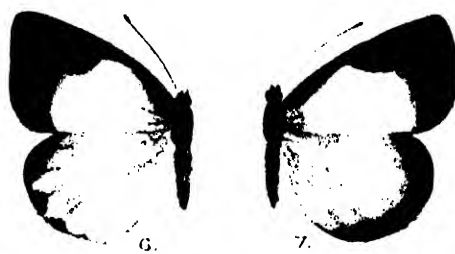
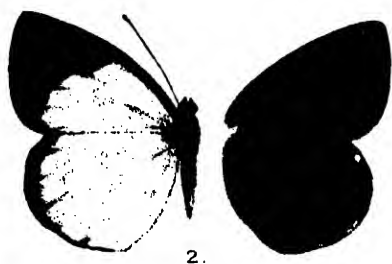
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A. E. Prout, del.

John Bela, Sons & Danielsson, L.

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A. E. Prout, del. 1923.

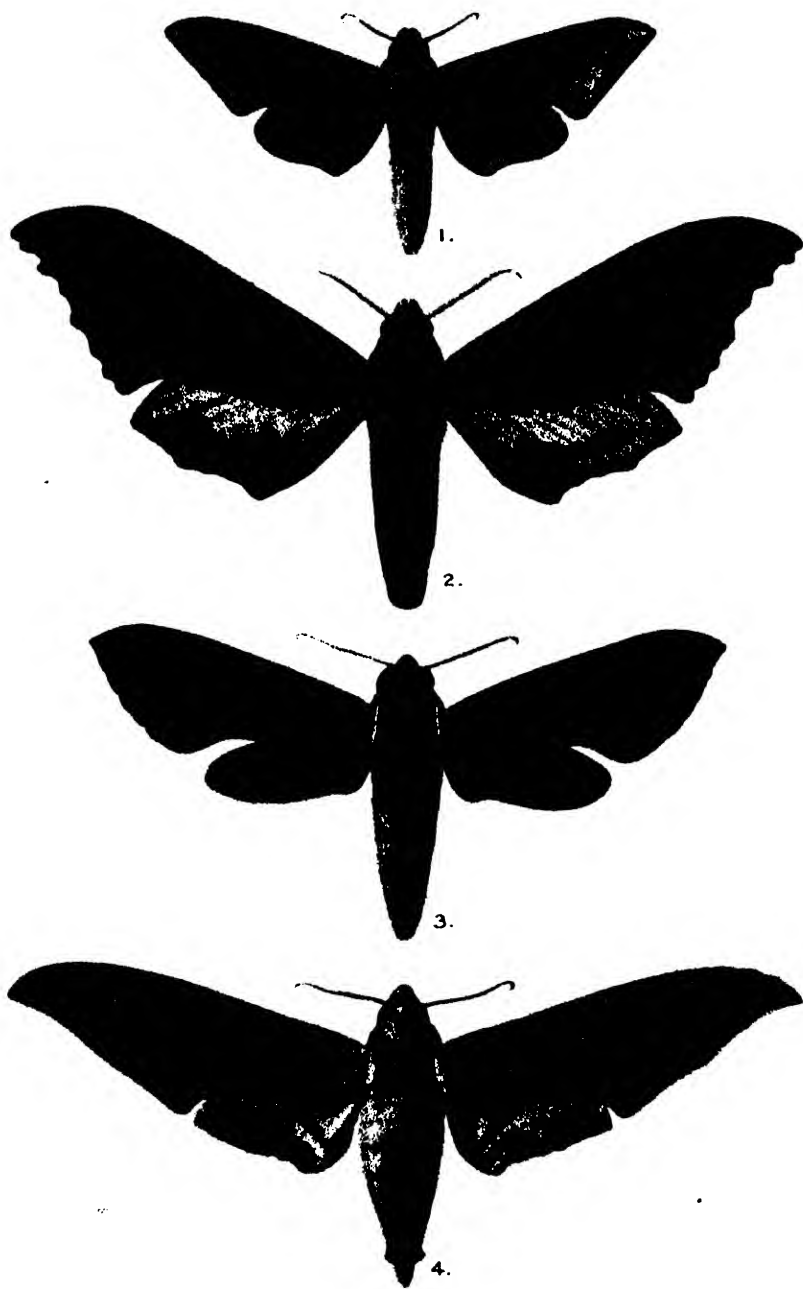
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NEW BUTTERFLIES FROM BURU AND NEW GUINEA.

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Fig.

1. *Polyptychus lapidatus* Joicey and Kaye, *Ann. Mag. Nat. Hist.* (8) 20, p. 230 (1917) (Coomassie)
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4. *Oryambulyx citrona* J. and K., *ibid.*, p. 309 (1917) (N. India)



H. Knight, del. 1918.

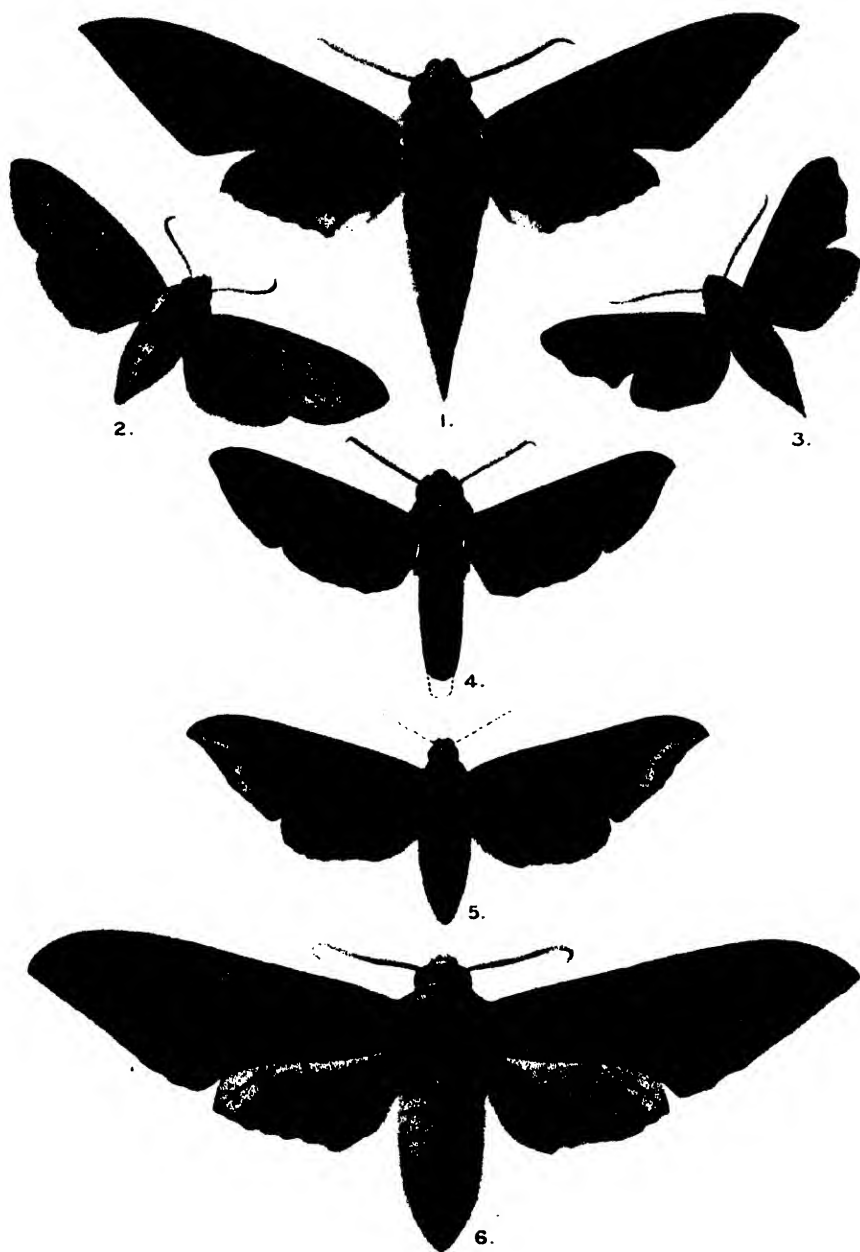
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NEW SPHINGIDAE.

EXPLANATION OF PLATE XI.

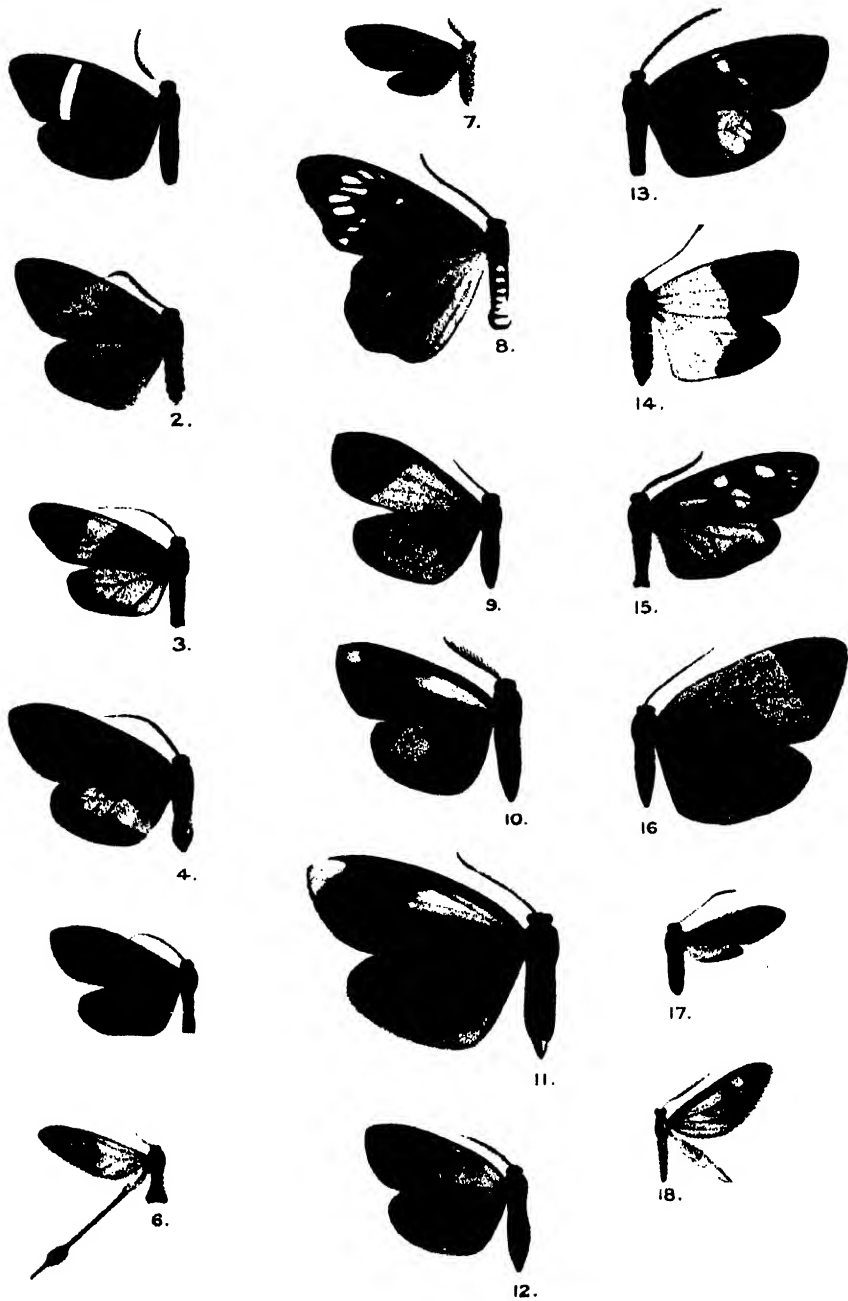
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1. *Cechenea sumatrensis* Joicey and Kaye, *Ann. Mag. Nat. Hist.*
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A. E. Prout, del. 1923.

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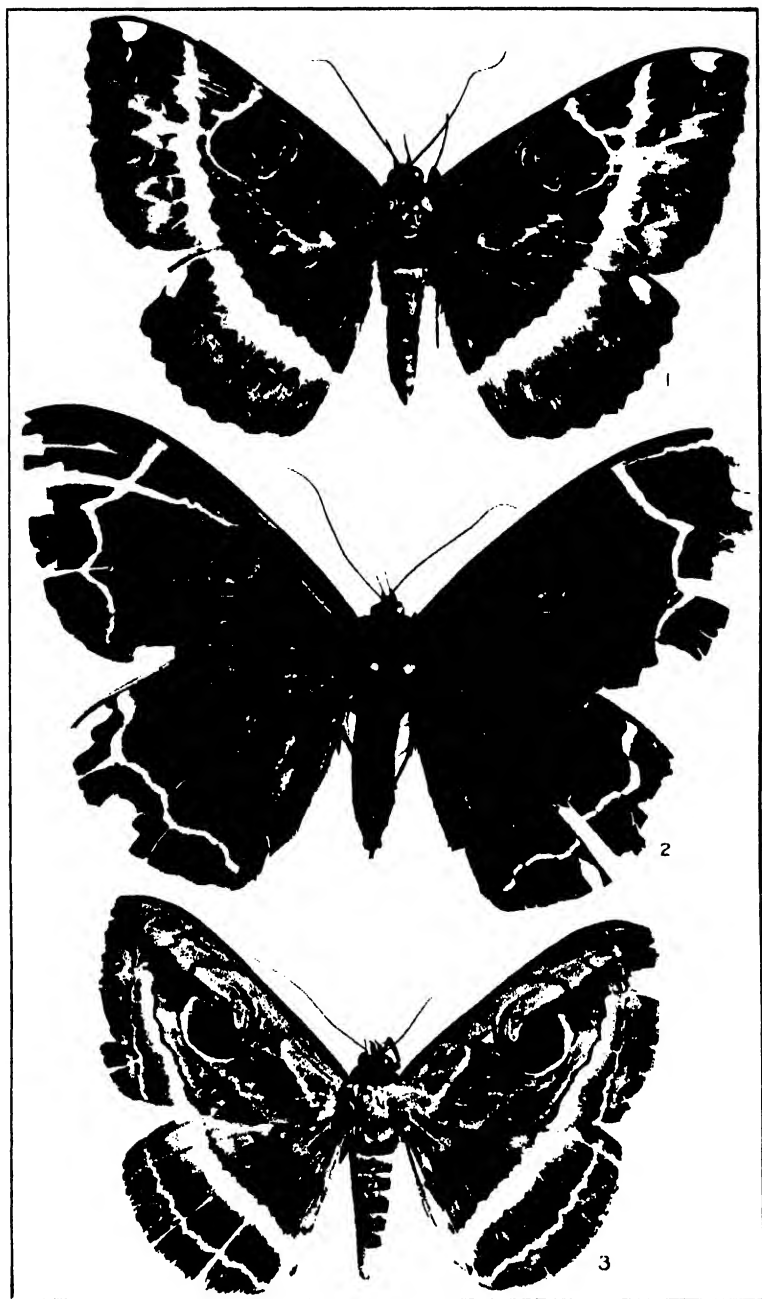
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NEW FORMS OF NOCTUIDAE.

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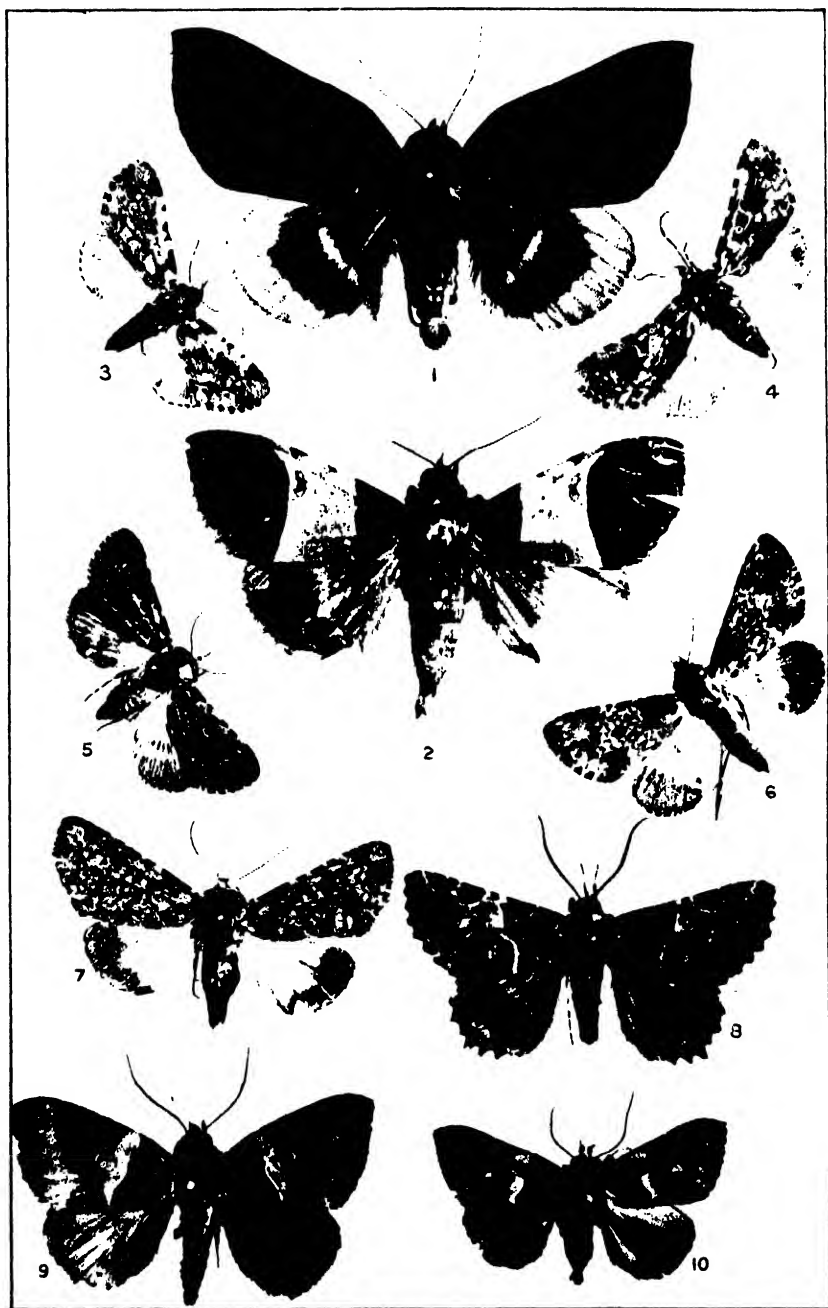
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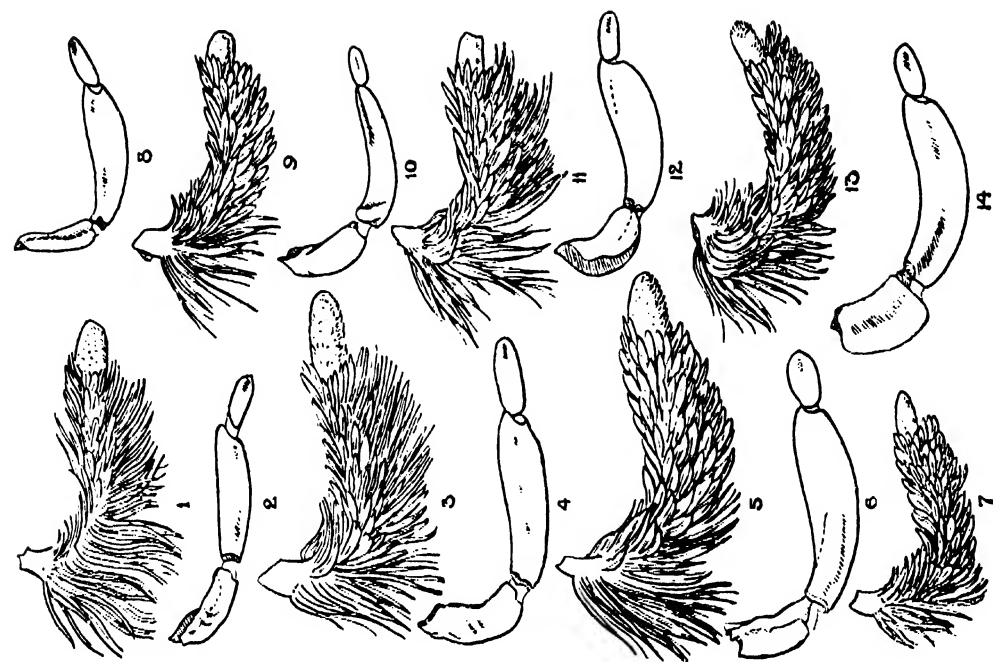


NEW FORMS OF NOCTUIDAE.

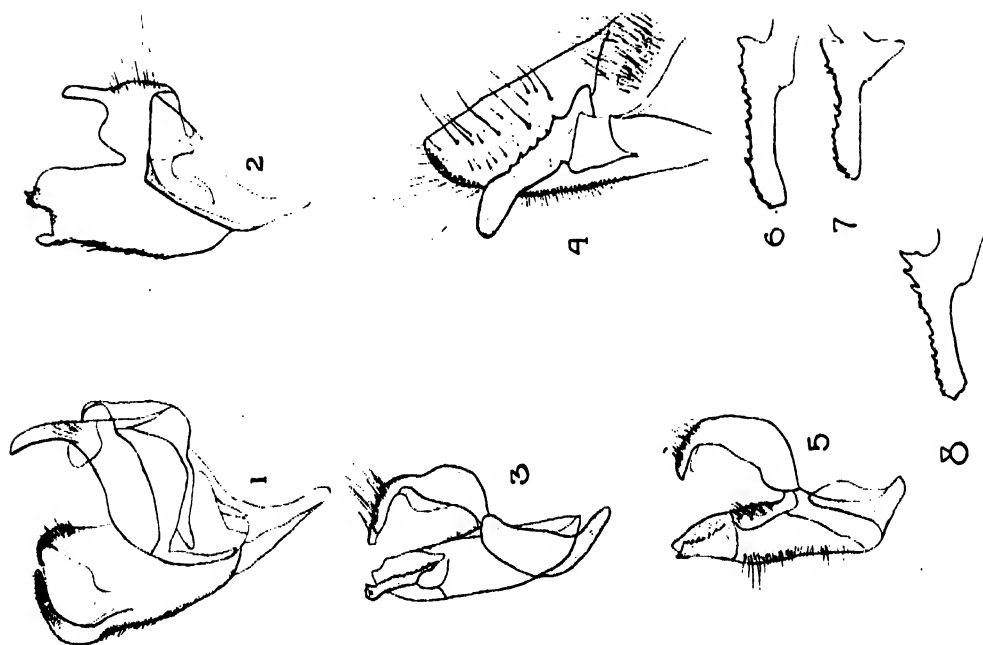
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XVII.—PALPI OF THE TRISULOIDES GROUP OF NOCTUIDAE.



XVI.—GENITALIA OF THE TRISULOIDES GROUP OF NOCTUIDAE.

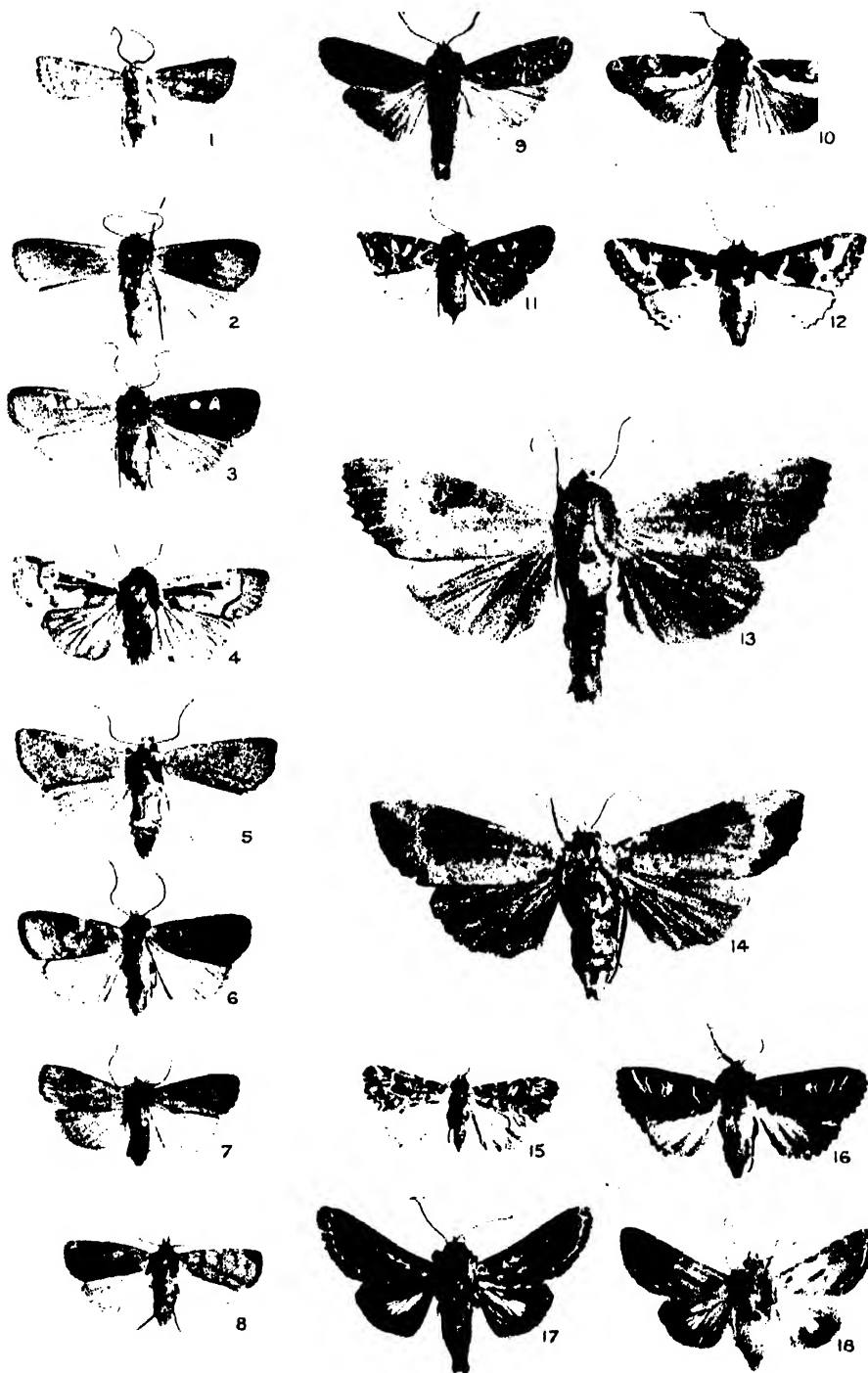
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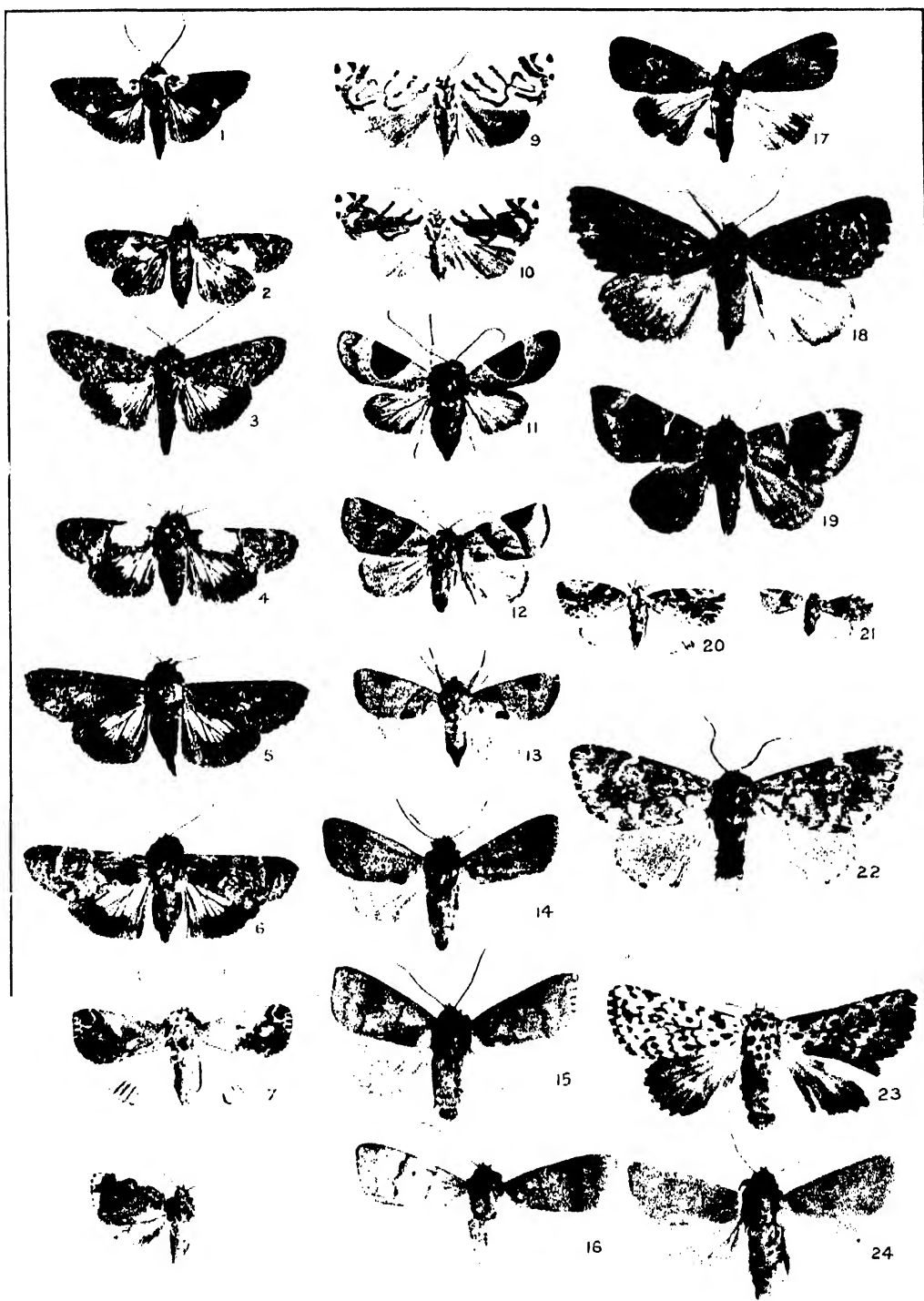
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NEW SPECIES AND FORMS OF NOCTUIDAE.

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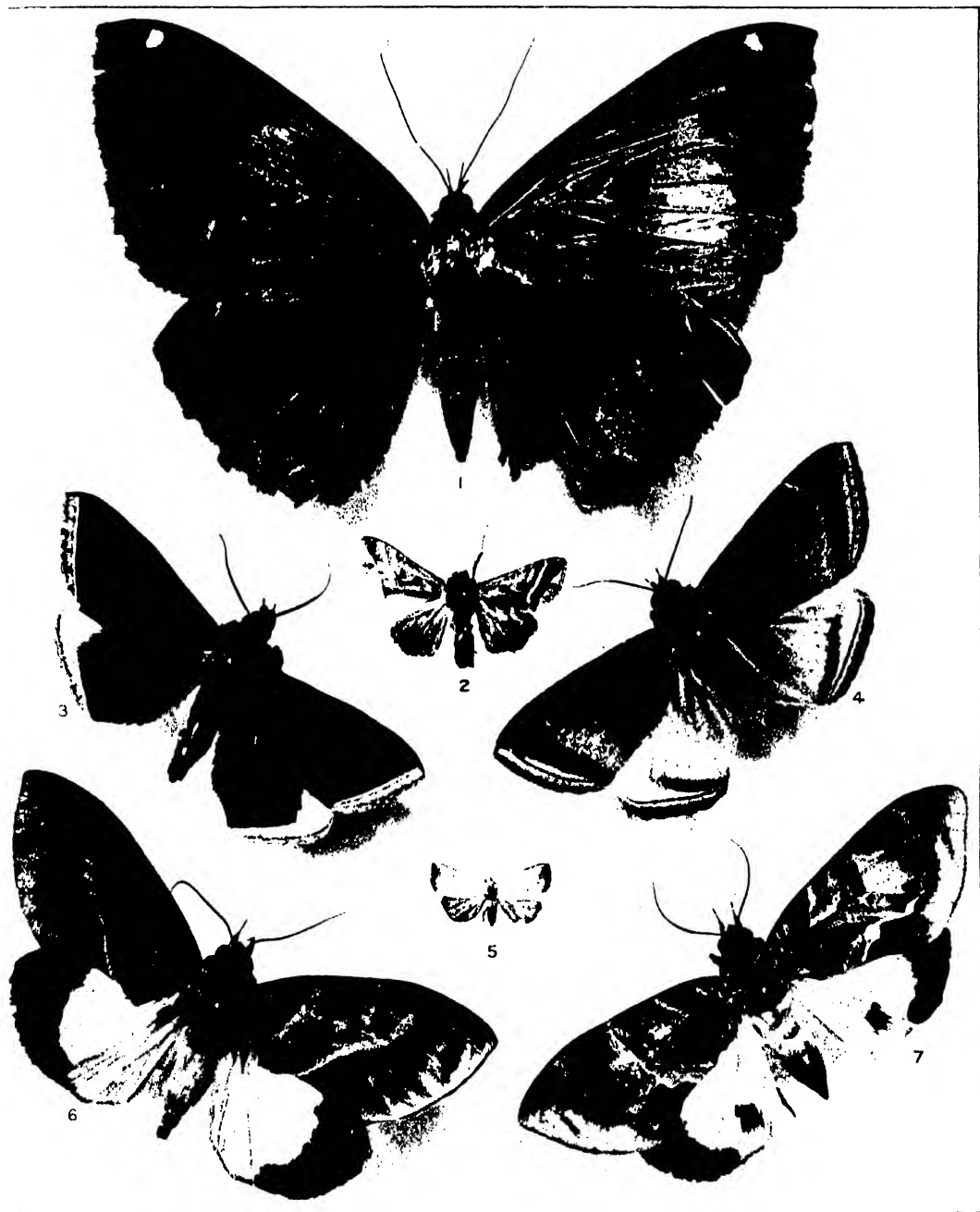
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NEW SPECIES AND FORMS OF NOCTUIDAE.

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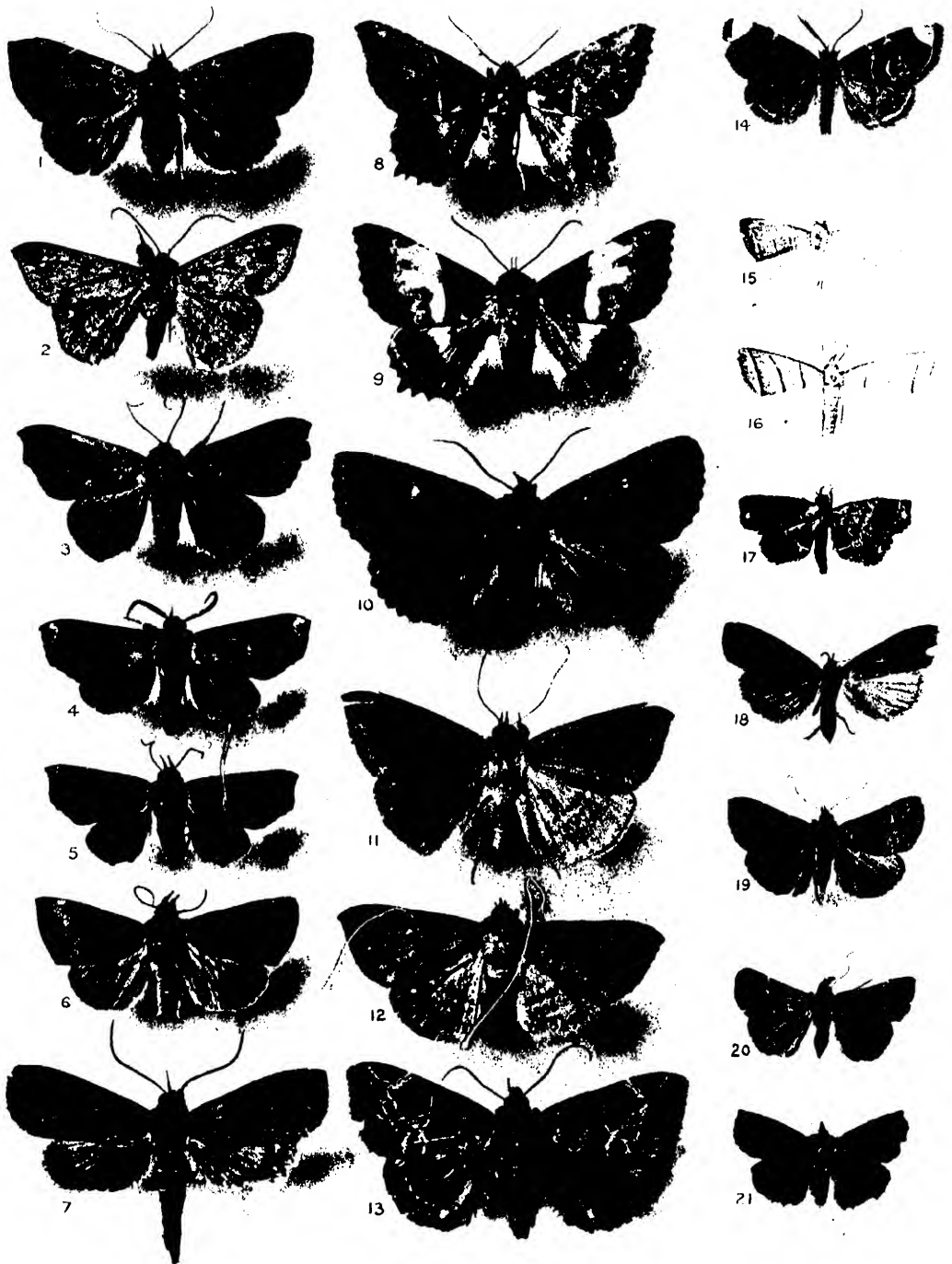
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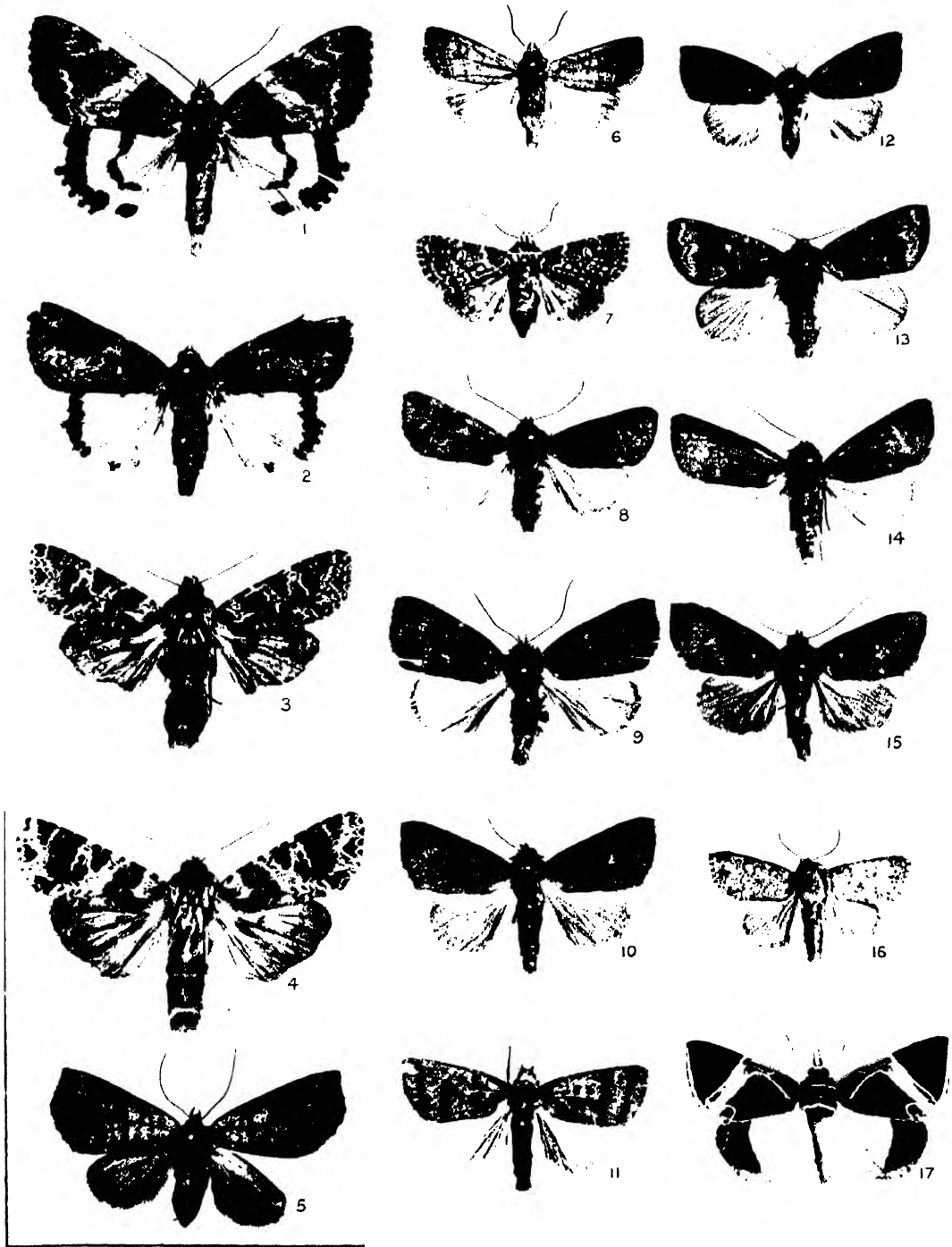
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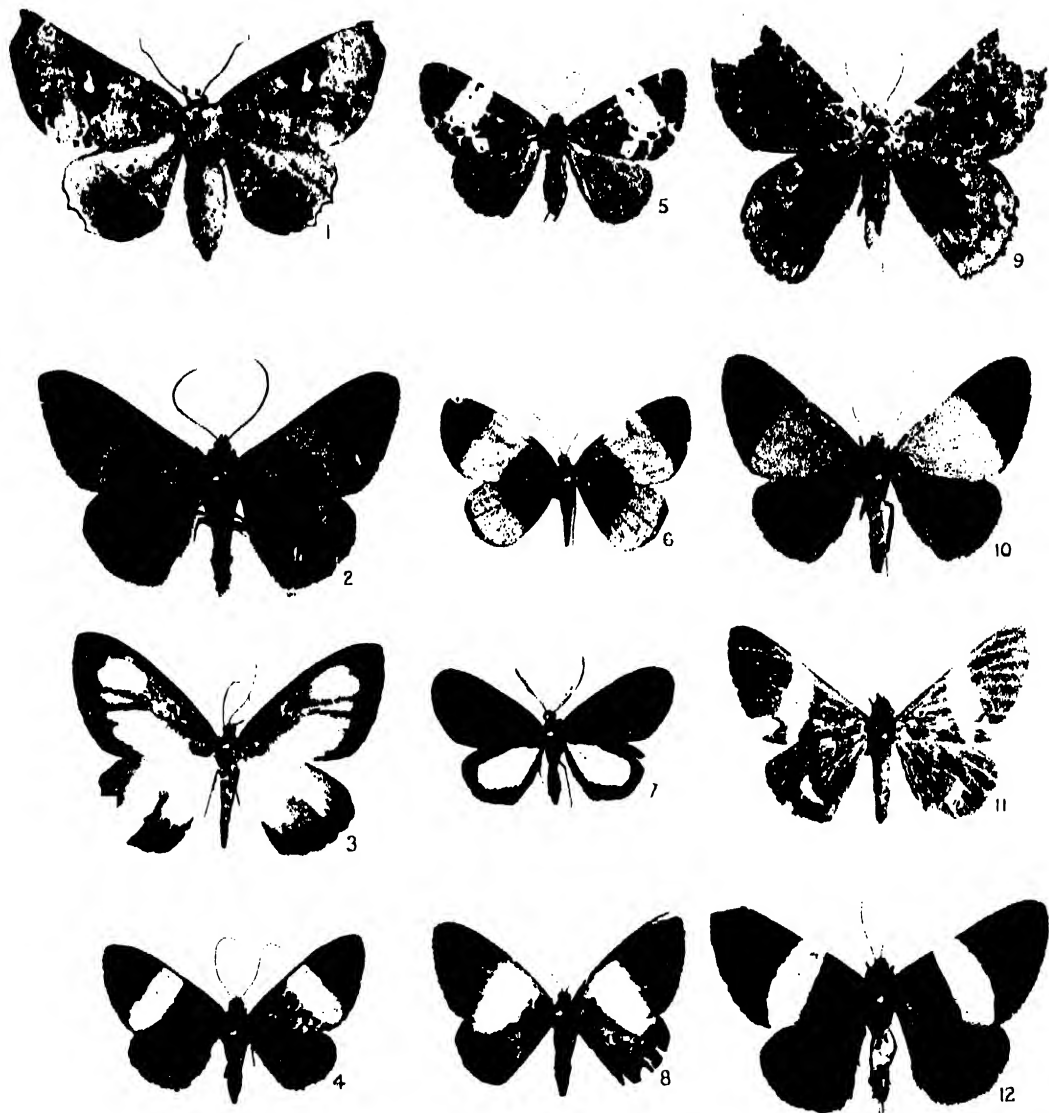
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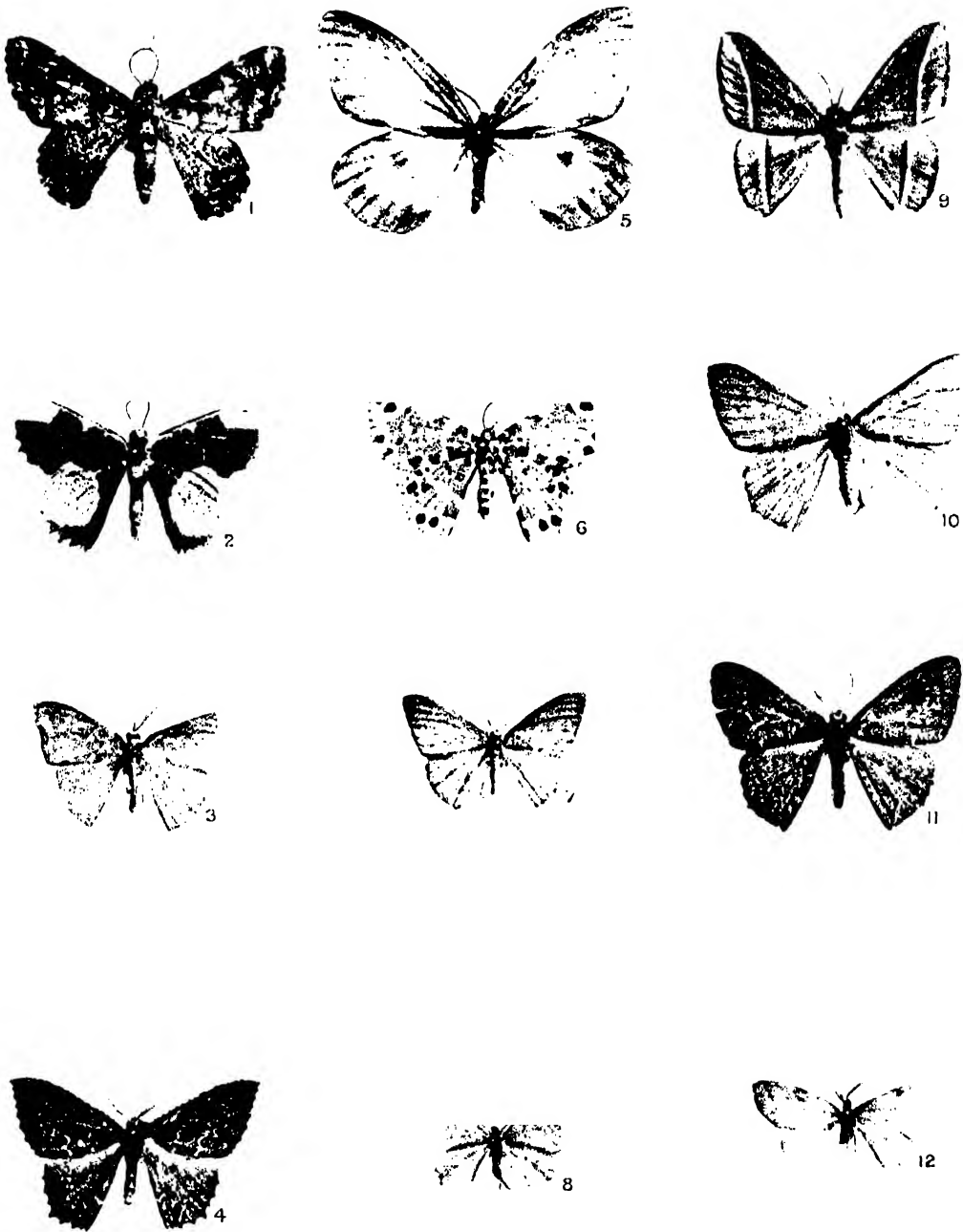
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NEW GEOMETRIDAE FROM DUTCH NEW GUINEA AND MEFOR ISLAND.

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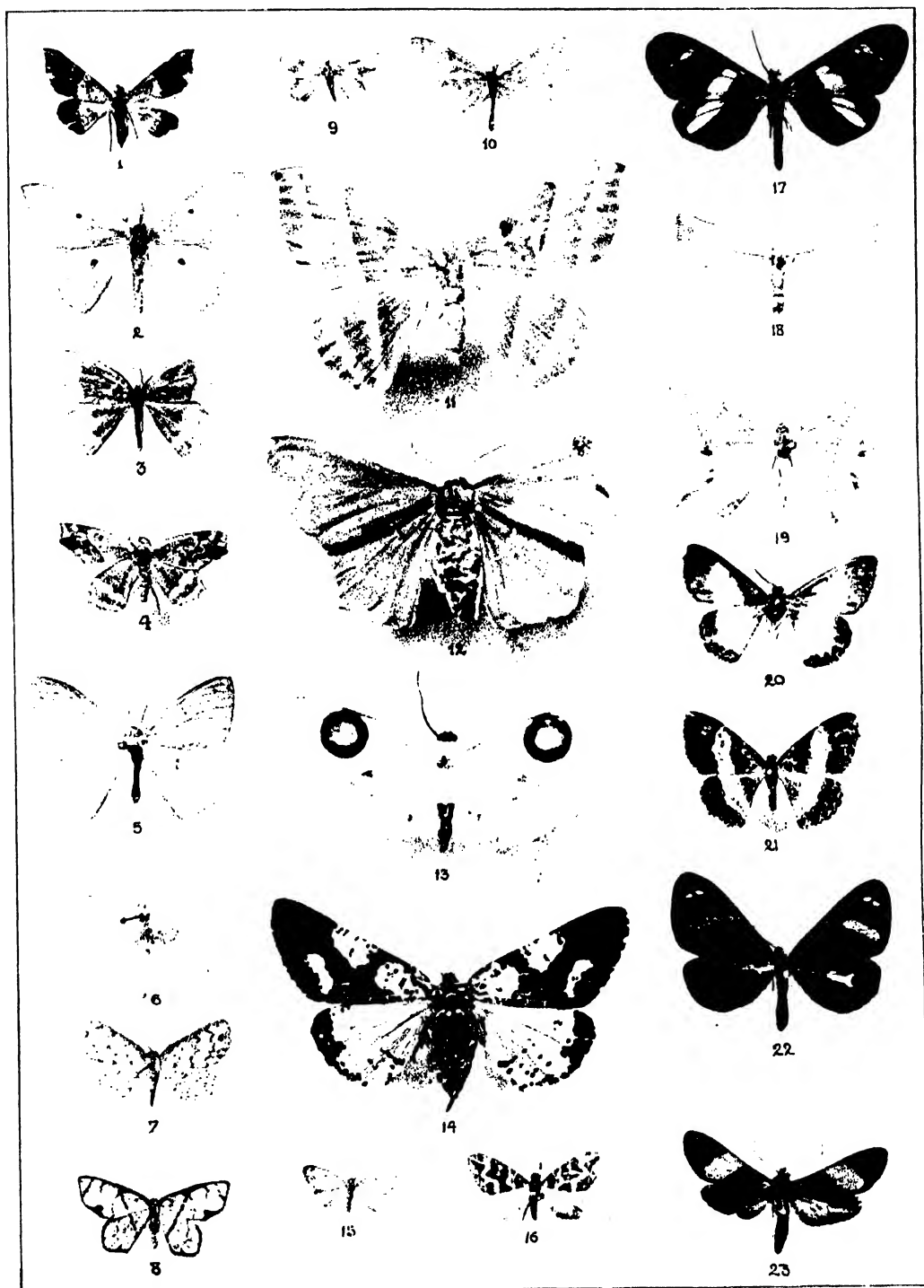
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NEW GEOMETRIDAE FROM DUTCH NEW GUINEA AND MEFOR ISLAND.

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NEW GEOMETRIDAE AND DIOPTIDAE.

AUTOBIOGRAPHIES OF ENTOMOLOGISTS AND ARACHNOLOGISTS WANTED.

For years I have been collecting materials for a Biographic Entomological Dictionary, to contain biographies of entomologists and arachnologists of all times and of all countries. Biographies of deceased entomologists and arachnologists I have already obtained from the literature almost completely, but to get biographies of living colleagues is much more difficult.

Accordingly autobiographies are wanted, and I hereby beg for such to be sent to me. All entomologists and arachnologists who have done scientific work as authors or as collectors are to be dealt with in this work. The autobiographies will, as far as possible, be printed in the form and the language as sent to me. Those who do not send their autobiographies ought not to expect that their biographies shall be contained in the book. Should anybody be willing to collect contributions for the work, I would beg him to be so kind as to communicate with me. The printing of the work is not in question.—Embrik Strand, Professor of Zoology and Director of the Systematic Zoological Institute of the University of Riga (Latvia), Kronvalda bulvars 9.

NOTICE.

THE BULLETIN OF THE HILL MUSEUM will be sent free on receipt of 30s. for one volume of three parts and index.

The BULLETIN will be sent in exchange to Institutions with publications dealing with Lepidoptera, and to authors publishing separate works.

Applications should be made to the Curator, The Hill Museum, Witley, Surrey.

The Index part for the first volume will appear at an early date.

INDEX TO PARTS 2 AND 3.

The Index to Part 1 will be found at the end of that Part.

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